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ABSTRACT

Information presented is intended to give each member of the interdisciplinary team (physician, optometrist, social worker, psychologist, teacher) a working knowledge of what each is able to do for a visually handicapped child. Discussion of medical considerations of visual impairment covers anatomy, physiology, and pathology of the eye, and medical evaluation and treatment techniques. Measurement of vision is reviewed in terms of mechanics of vision, definitions of visual impairment and measurement terms, and vision screening. Examination of casework services for the visually handicapped child includes working with parents, services with children, caseworker/teacher relationship, and coordination functions of the caseworker. Psychological evaluation principles and techniques as related to the visually handicapped child are explained. Finally, educating the child is described (objectives, facilities, classroom activities, securing parental support). The role of each specialist is related to the work of the interdisciplinary team. (KW)

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THE TEAM APPROACH IN DIAGNOSING AND EDUCATING THE VISUALLY IMPAIRED PUPIL

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To the cheerful teachers of the visually impaired

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FOREWARD

Experience in preparing the visually impaired to assume a normal productive role in society has indicated the necessity for a basic reliance on education. The experience has also provided a specific picture of the interprofessional team work that is needed to build an appropriate educational program for each child. Physicians, optometrists, teachers, social workers, and psychologists all contribute significantly to the education of the visually impaired child. The child profits most when each of these specialists has a working knowledge of what the other is able to contribute and understands what each has done for the child. Despite recognition of the close professional cooperation essential for outlining an effective program for the child, the several professional specialists are often unfamiliar with how to relate their special skills to the visually impaired. They are less likely to have experience in working together on an educational team.

In order to secure the advantages of full professional cooperation for educating the visually impaired, Mr. James E. Selinger, Director, Title VI Programs, Elementary and Secondary Education Act, Office of the Illinois Superintendent of Public Instruction, authorized a grant of money to support a special training institute. As approved in final form after consultation with Mr. David W. Donald of the Department of Special Educational Services and Mr. Dennis E. Kelly of the Department of Pupil Personnel Services from the staff of the Illinois Superintendent of Public Instruction, the grant allowed for the publication of materials covered in the training institute. The project brought together approximately thirty-six teachers, social workers, nurses, and psychologists who worked in schools in Illinois for two weeks of special training in the team approach for educating the visually impaired. Assembled in nine interdisciplinary teams, the

trainees were presented lecture-demonstrations by an experienced consultant staff prior to being assigned a visually impaired child and family for work-up. The consultant staff supervised the work-ups and offered suggestions to strengthen the educational plan which each team presented as the integration of findings obtained about the child by each team member.

The consultant staff for the training institute included:

Robert Reardon, M.D., Ophthalmologist
Hal Adelman, O.D., Optometrist
James Mooney, M.S., Psychologist
Dorothy Bryan, M.S., Educator
Miriam Norris, M.S.W., Social worker
Carlene Roberts, M.S.W., Co-director and social work consultant
George McCoy, Ph.D., Director and psychologist consultant

Participants were enthusiastic about the opportunities which the institute provided for improving the delivery of high quality educational services to the visually impaired child. Believing that the content covered in the sessions merited sharing with all professionals engaged in educating the visually impaired, the director assumed the task of preparing the presentations for publication and dissemination. In taking this assignment, I assume responsibility for all errors in the materials while acknowledging the consultant staff as the source of many inspirational ideas. It is regretted that the printed word does not adequately convey what may have been the most important consequence of the total project, the skilled coordination evidenced by each of the teams.

George F. McCoy
15 January 1972
Illinois State University

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CHAPTER I.

MEDICAL CONSIDERATIONS OF VISUAL IMPAIRMENT

Vision is the outcome of complex functions which originate with the eyes. A discussion of visual impairments begins with a basic orientation to the structures and physiological properties of the eye. Although the presentation made in this chapter will be rather general, the review will demonstrate the complexity of the eye and the correlated conditions which can result in interference with usual visual functions. Correction of dysfunctions of the eye may require medical, surgical, or educational procedures. The impairments of special concern for the school are those which are likely to require all of these procedures in various combinations. The "team approach" to treating disabilities by the coordinated efforts of specialists from various professional fields is gaining in acceptance, suggesting the greater effectiveness of this method. Team work demands a minimal knowledge of the terms, concepts, and skills used by other members of the team. An outline of the anatomy, physiology, pathology and treatment of eye defects will provide elementary insight into the work of one team member, the specialist physician.

The ophthalmologist. Physicians are professionals trained in techniques for healing and restoring physical defects and damage of the body. After a general education in medical schools, they usually complete additional training to qualify as a specialist in the treatment of a particular area. An ophthalmologist is a physician who is a specialist in the study and treatment of diseases and defects of the eyes. He may also be referred to as an oculist. Physicians are licensed to carry out procedures of surgery and to administer medications. The ophthalmologist may be confused with an optometrist, a specialist who is trained in the measurement of vision and examination of the eyes to identify refractory defects for which they may prescribe corrective lenses or exercises, functions which duplicate some of those carried out by ophthalmologists. Another closely related specialist is the optician, a person who makes or deals in eye glasses. These three specialists often work in close cooperation in the correction of a visual defect. In this chapter, the emphasis is on the functions and perspectives of the ophthalmologist.

Anatomy of the Eye

The eye is a sensory organ specialized for receiving light and transmitting light impulses to the brain. The interpretation of these impulses results in the phenomena which are referred to as vision, or perhaps more correctly as perception, since the complex activities involved are more than the simple transmission of light energy. Information about cortical functions, processes which may be the most significant sources for understanding the many aspects of behavior,

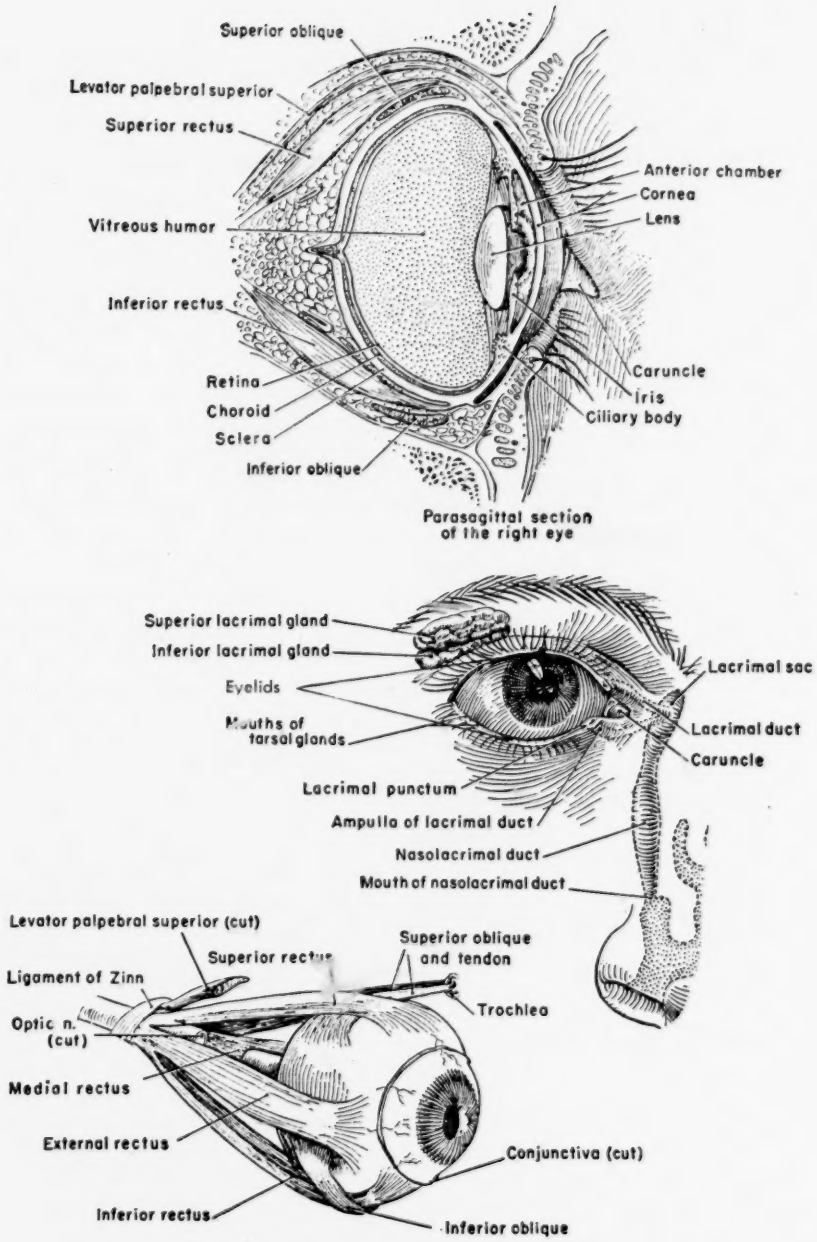

Figure 1. The eye and related structures.

is very limited. The functions and component parts of the eye, the starting point for vision, can be discussed with somewhat greater assuredness.

The eye is a spherical shaped organ made up of layers of specialized tissues, devices for controlling the entrance of light rays, and nerve fibers for picking up and transmitting the light rays as converted to neurohumoral form. The eye is supported and moved by a group of six small muscles attached to the tough outer covering of the eye. The eye muscles anchor the eye to the orbit, the depression in the skull which contains the eyes. The optic nerve originates in the back of the eye and extends into the brain areas, terminating on the occipital lobes in an area specialized for interpreting visual stimuli. Externally, the eye is shielded by the eye brows, eye lids, and eye lashes.

The following definitions may be useful to the reader in the consideration of the anatomy of the eye.

Sclera—the tough white fibrous external layer of tissue which holds the eye together.

Cornea—the outer layer of the eye ball covering the iris and pupil. Continuous with the sclera, the corneal portion is transparent to allow passage of light.

Choroid—the middle layer of the eye, largely made up of blood vessels and pigments.

Retina—the innermost layer making up the wall of the eye and consisting mainly of terminal nerve cells, rods and cones, which have become specialized for light sensitivity.

Ciliary processes—folds in the choroid layer near the lens through which fluids inside the eye are circulated.

Iris—a circular disc of small muscle fibers arranged both in a circular and radial pattern to permit a central opening of varied size. The ciliary muscle and ciliary ligament operate the iris.

Pupil—the central opening of the iris. The size of the opening is varied according to the intensity and amount of light.

Aqueous humor—fluid in the smaller spherical segment formed by the cornea bulging out over the iris and lens.

Vitreous humor—the clear jelly-like substance filling the inner cavity of the eye.

Lens—a double convex lens immediately in back of the iris situated to focus light admitted through the pupil and held in position by the suspensory ligament.

Macula lutea—an oval depression on the retina slightly below the optic disc. Light rays striking this area can be subject to the most

effective processing by the eye making this the area of sharpest visual discrimination.

Optic disk (papilla)—a small whitish colored spot located in the medial posterior area of the eye marking the entrance of the optic nerve and blood vessels serving the eye.

Optic nerve—the nerve carrying light impulses, received in the rods and cones of the retina to cerebral centers; the second cranial nerve.

Conjunctiva—membrane lining the inner side of the eye lids and the front portion of the eye ball.

Eyelids—the two movable folds of skin, one upper and one lower, which can cover the eye and provide protection.

Eye muscles—a group of six small muscles that maintain a balance which controls the normal movement of the eye; four rectus muscles attached at each quadrant regulate straight, horizontal, and perpendicular motion, while two oblique muscles give ability to make slanting movements.

Physiology of Vision

The visual system found in humans has advanced far beyond simple signaling of the presence or absence of light. The function of the eye in dealing with light has often been equated to that of a camera in making a photograph. Detailed study of the eye indicates the functions carried out by the eyes are more dynamic and more precise than this analogy suggests although a gross similarity can be observed. A detailed image of the external world is projected on the retina in the form of reflected light rays. Specialized receptors code and transform the light rays which are representational of their originating object images into nerve impulses. The image outlining a viewed object is not fixed on the retina, for it has been demonstrated that when an image stabilizes on the retina, it fades away. The eye reports only the changing scene. Perception of stationary objects which maintain a fixed position is possible because the eyes make continual small movements. The nerve connections from the rods and cones are arranged so that stimuli from the right side of each eye are paired. The stimuli from receptors on the left side of each eye are also paired for transmission to the cerebral centers of the cortex. This crossover is made at the interchange of the optic nerves, a point known as the optic chiasma.

External visual organs.

In order to move freely, the eye must have continual lubrication. The eye lids and conjunctiva are kept moist by fluids called tears. Tears are secreted by the lacrimal glands located above the eye. When a foreign body falls on the conjunctiva, the irritation causes an increase in the secretion, and the tears act as a cleanser; washing the foreign object away. The lids, eye brow, and eye lashes serve a me-

chanical function of shielding the eye from excess light and from potential irritations which might be caused by the presence of small foreign particles on the eye.

Transmission of light.

The cornea is transparent to permit the passage of light. Light continues through the aqueous humor to the pupil. The iris reacts to the intensity of light and regulates the size of the pupil. The arrangement of the lens is such that the form of incoming images is reversed, or made to seem "upside down" compared to their actual orientation. The light rays continue through the jelly-like vitreous humor and strike the retina.

Activity of the retina.

The retina is composed largely of receptor units specialized for receiving light stimulation. Photoreceptor units are of two types, rods and cones. Rods are sensitive to very dim illumination (scotopic, or darkness, vision). Cones react to greater intensities of light (photopic, or day, vision). It is estimated the eye contains approximately 125 million rods and about five times that number of cones. Rods and cones have a greater density along the central posterior part of the retina and are less frequent as the outer peripheral lens is approached. The greatest number of cones is found concentrated at the fovea (macula lutea), an area in the approximate center of the posterior of the retina. Light striking this area can result in the most sharp and clear perception (the greatest acuity). The absence of photoreceptors in the small area where the optic nerve enters the eye results in a normal "blind spot." Since light reflected from an object would not strike simultaneously the blind spot in each eye at any one time, perception is not influenced.

Photoreceptor units are six or more times more numerous than are optic nerve fibers so that each nerve fiber receives stimuli from several photoreceptor units. Rods and cones function by absorbing light rays which are then converted by action of specific chemical substances. In the rods, the light sensitive chemical is called rhodopsin. Light causes rhodopsin to break down into retinene and opsin. In the cones, light is absorbed by iodopsin which is broken down by light into retinene and photopsin. Retinene, which is closely related to Vitamin A, thus plays an important role in vision and seems most obviously involved in night vision. The re-synthesis of rhodopsin and iodopsin by the recombination of their derivatives after reacting to light entails a complex enzymatically governed process. A number of aspects of visual perception including brightness, color differentiation, and dark-light adaptation are explainable by the biochemical properties of rhodopsin and iodopsin.

Neural transmission.

Nerve fibers collect the biochemical materials into which light is transformed in the rods and cones and relay the stimulation

to nerve cells on the retina. Collecting nerve cells are connected to larger ganglion cells whose axons form the fibers of the optic nerve. Stimuli from the right side are separate from those of the left side of the eye as the optic nerve leaves the eye and connects to cortical centers. The optic nerve fibers from each eye come into contact at a point in the back of the eyes known as the optic chiasma. At this point, the nerve fibers are recombined and continue to the higher cortical centers in such a combination that all stimuli from the right side of both eyes is carried to the right side of the occiptal lobe, and all stimuli from the left side of both eyes reaches the left side of the occiptal lobe. Normally, impulses received on the left side are those given recognition. Because of the reversing functions of the lens, this means that stimuli origination in the right side of the visual field are the ones eventually reacted to. In addition to the little understood processes by which interpretation of stimuli are made, the higher nervous system regulates the adjustment of the eye to deal with light at a maximum efficiency level. These adjustments may change the opening of the pupil to allow more or less light, or may change the shape of the eye so that the incoming light rays strike photoreceptors of the retina at the most advantageous angle for efficient processing (greatest acuity). The spherical shape of the eye mirrors a similar shaped visual field with objects in the center of the field viewed most sharply, whereas objects in the periphery are seen less clearly. (This relationship will be discussed at greater length in the section on measurement of vision in chapter 2.)

Pathology of the Eye

The eye is a complex and highly specialized organ. Vision will be impaired by defects in any of the eye components, but faults in the light transmission system are the most frequently encountered types of difficulties. For convenience in discussion, conditions which may result in visual impairment are grouped under six headings. Since most of these conditions of pathology are to be diagnosed by the physician, the common medical name applicable to the condition is used.

1. *Congenital disorders.* Included in this largest category of pathological conditions influencing vision are hereditary, prenatal, and other defects which although of obscure origin can generally be identified at birth.

Anophthalmos—congenital absence of the eye; also applied to instances in which a defective eye is removed surgically shortly following birth.

Aphakia—congenital absence of the lens of the eye.

Albinism—a hereditary condition resulting in loss of pigment in the iris, skin and hair and generally accompanied by decreased visual acuity, nystagmus, photophobia and refractive errors.

Amblyopia—a condition in which there is marked inability to see well, even though there is no discernible defect of the tissues.

Ametropia—term for a broad condition of reduced visual efficiency and ability to focus objects on the retina because of imperfections in the refractive process of the eye; included are hyperopia, myopia, astigmatism.

Aniridia—absence of the iris.

Aniseikonia—a condition in which the image of an object received by one eye differs significantly in size or shape from that received by the other eye.

Astigmatism—a condition in which defects on the curved refractive surface of the eye result in striking light rays being diffused rather than concentrated (focused) with a resulting blurred and distorted image.

Cataract—a condition in which the lens and/or its capsule become opaque, usually by the action of a membranous growth, reducing the passage of light rays.

Coloboma—a congenital fissure which may involve any part of the eye, as coloboma of choroid, coloboma iridis, coloboma lentis.

Color deficiency—a congenital deficiency which results in varying degrees of inability to perceive differences in colors, especially red and green. Popularly referred to as "color blindness," it is more common in males.

Ectropion—an eversion or turning inside out of the eyelid, exposing the inner surface of the lid.

Entropion—an inversion or turning inward of the eyelid, placing the eyelashes in the eye socket.

Exophthalmos—a condition in which the eye balls protrude, making an abnormal bulge from their sockets.

Hemianopsia—blindness in one half of the field of vision of one or both eyes.

Hyperopia—a condition wherein the eyeball is too short in diameter or the refractive action of the lens is too weak so that light rays obtain a focus at a point behind the retinal surface, commonly known as "far sightedness."

Myopia—a condition in which the eye ball is too long or the lens refractive action is too strong so that light rays are focused in front of the retinal surface, commonly known as "nearsightedness."

Keratoconus—a cone-shaped deformity of the cornea.

Megalophthalmos—abnormally large eyeball, also macrophthalmus.

Microphthalmos—abnormally small eyeball.

Night blindness—a condition in which vision is good in normal light conditions, but deficient in faint light.

Nystagmus—a marked involuntary rapid movement of the eye ball; movement may be lateral, vertical, rotary, or mixed.

Pannus—an abnormal membrane.

Phoria—a root word describing a condition wherein the eyes have a detectable tendency to turn from the normal position as a consequence of unequal action of the supporting eye muscles. Used with a prefix, the direction of the movement is denoted as:

esophoria—tendency of the eye to turn inward.

exophoria—a tendency of the eye to turn outward.

heterophoria—a tendency for the eyes to deviate from the normal binocular fixation unless forced into fixation by voluntary muscular effort.

Photophobia—an abnormal sensitivity to and discomfort from light.

Retinitis pigmentosa—a chronic progressive degeneration of the retina with characteristic deposits of pigment.

Retinoblastoma—a malignant intraoccular tumor usually occuring before age five years and generally necessitating surgical removal of the eye.

Retrolental fibroplasia—a condition in which there is abnormal dilation of the retinal vessels, retinal exudation and detachment, and the formation of a retrolental membrane.

Scotoma—the occurrence of areas on the retina in which there is an absence of photoreceptors and consequently "blind spots."

Strabismus—synonymous with tropia, this is a condition brought about by an imbalance of the supporting eye muscles so that the eyes are not directed simultaneously toward the same object ("cross-eyed," "wall eyed").

Synechia—adhesion of the iris to the cornea or lens.

Tropia—a root word designating a manifestly observable deviation of the eyes, turning from the normal axis of viewing because of imbalance in the muscles operating the eyeball. Used with a prefix, the direction of the deviating movement is denoted as:

esotropia—manifestly observable turning inward of the eye ("cross eyed").

exotropia—manifestly observable turning outward of the eye ("wall eyed").

heterotropia—a manifestly observable turning of the visual axis of one eye out of alignment with that of the other eye ("cross-eyed," strabismus).

Tunnel vision—also known as "gun-barrel" and "tubular" vision, this is a condition in which the visual field is greatly concentrated with vision restricted to a small central area.

2. *Inflammation conditions.* Included in this category are irritations of the eye resulting from infections, injuries, and allergies. Many of these conditions have only temporary significance, but if not given prompt attention, they may have permanent consequences from scarring or erosion damage. Treatment of these conditions typically requires the skill of a physician. They may be found in association with other permanent disabilities and are recognizeable by the suffix "-itis." When of a chronic nature, they can be of educational significance. Some of the conditions listed under the category of "congenital" may also be included in this group.

Blepharitis—inflammation of the margins of the eyelids.

Chalazion—inflammatory enlargement of glands in the eyelids.

Chorioretinitis—inflammation of the choroid and retina.

Choroiditis—inflammation of the choroid.

Conjunctivitis—inflammation of the conjunctiva, possibly the most frequently encountered inflammatory condition of the eye.

Cyclitis—inflammation of the ciliary muscle around the lens.

Interstitial keratitis—a variety of keratitis chafacterized by deep deposits on the cornea resulting in the cornea becoming hazy and taking on a ground-glass appearance; this condition tends to be chronic.

Iridocyclitis—inflammation of the iris and ciliary body.

Iritis—inflammation of the iris.

Keratitis—inflammation of the cornea.

Ophthalmia—a general inflammation of the eye or the conjunctiva.

Ophthalmia neonatorium—an acute gonorrheal conjunctivitis in the newborn infant.

Optic neuritis—inflammation of the optic nerve.

Phlyctenular keratitis—a variety of keratitis characterized by the formation of infiltrates on the cornea.

Ptosis—drooping of upper eyelid from paralysis of third cranial nerve.

Retinitis—inflammation of the retina.

Scleritis—inflammation of the sclera.

Stye—acute infectious inflammation of a sebaceous gland on the margin of the eye lid.

Sympathetic ophthalmia—inflammation in one eye due to the effects of an inflammation in the other eye.

Trachoma—a variety of infectious kerato-conjunctivitis. When chronic, the condition results in severe scarring of eyelids and cornea.

Uveitis—inflammation of the uveal tract.

3. *Trauma conditions.* This category includes all conditions which involve injury or damage to the eye by action of chemicals, burns, blows, pressures, and foreign objects penetrating the eye. Damage comes from the destruction of tissues, loss of fluids, and scarring.

Defects resulting from the action of these agents are encountered with increasing frequency with age. Inflammation and infection are often associated with these traumas. Consequences for vision vary as to duration and degree of impairment. Treatment involves the attention of a physician and often entails educational follow-up. Some conditions produced by traumas may also have other causes (Aniridia, Aphakia, Astigmatism, Ptosis, Scotoma). Descriptions of these conditions have been presented in other sections and will not be repeated in this paragraph.

Floaters—small particles of blood or tissues which float in the vitreous humor and can be seen occassionally as dots by the individual.

Hemianopsia—loss of vision in one-half the visual field of both eyes because of damage to the optic nerve.

Hyphema—bleeding into the aqueous humor.

Retinal detachment—separation of a part of the retina from the other components of the uvea.

4. *Regenerative conditions.* In this category are those conditions resulting from growth which is not a usual part of the developmental and maturational processes. Dysfunctions can arise from failures in normal growth processes. In some instances, normal growth proceeds unchecked. This proliferation results in abnormal enlargements. Where the usual stimulation of the growth process is not maintained, the organ structure which materializes is smaller than normal. Processes of repair and reconstitution sometimes have these same consequences of under or over doing the repair with a resulting displacement and interference with usual functions. Tumors and proliferative new growth processes are likely to have pathological consequences. Damage to the eye produced by regenerative changes results from excessive pressures and crowding, competition for nutrient materials, changes in physical properties (size, shape, form), and displacement of tissues. Some pathologies discussed in other etiological groups may also be caused by regenerative dysfunctions. These

include Astigmatism, Cataract, Retinoblastoma and Retinopathy. In addition, the regenerative group of pathologies include:

Buphthalmos—the first stage of hydrophthalmus; an enlargement of the eye.

Macrophthalmos—any abnormal enlargement of the eyeball.

Megalophthalmos—same as macrophthalmos.

Microophthalmos—any abnormal smallness of the eyeball.

Synechia—adhesion, usually of the iris to the cornea or lens.

Tension, intraocular—pressure of fluids inside the eye against the wall of the eyeball.

5. *Deprivation conditions.* Included in this category are a small number of generalized visual impairments whose origins are obscure. Vision is deficient even though the parts of the eye are intact as ascertained by normal examination procedures. Lack of using the eye and minimal exercising of visual processes are suspect. Irregularities in developmental processes may contribute more to these deficits than was previously acknowledged, especially in consideration of recent evidence clarifying the role of experiences in molding the potential of an individual. Difficult to diagnose; when permitted to go untreated these conditions can prove the most difficult to correct. Ametropia, discussed in other etiological groups, may also have an origin in deprivation conditions. Other conditions include:

Amblyopia exanopsia—dimness of vision associated with disuse of the eye.

Asthenopia—eye fatigue as a consequence of tiring of the eye muscles.

Malfusion—inability to coordinate the images seen by each eye into a single image.

6. *Degenerative conditions.* Failures in normal metabolic processes and the breakdown of body organs naturally occurring with age are the sources of many visual impairments. Most of the visual defects observed in adults are consequences of aging. In addition to the outright deterioration of tissues, damage to the eye parts is brought on by the increased stress placed on them by the failure of other parts of the system. Components which have been only minimally adequate are the most susceptible to these stresses. In other instances, eye defects are the outcomes of less direct processes. Metabolic disorders may not directly damage the eye but may result in more than usual amounts of blood and tissue materials in the eye fluids or changes in the shape of the eyeball. Metabolic disorders may reduce vision when the eye is no longer supplied with essential nutrient materials (as example, Vitamin A) to maintain the chemical processes which absorb and transmit light rays. Night blindness and retinal detachment,

disorders which may be caused by other etiologies in addition to resulting from degenerative changes, have been mentioned. Other important disabilities associated with degenerative changes include:

Exophthalmus—a condition in which the eyeballs protrude or "bulge" abnormally, frequently seen in association with thyroid disorders.

Glaucoma—a condition with increased and sustained intraoccular pressure resulting in a loss of flexibility of the eye and eventual reduction in vision; more frequently seen in adults.

Optic atrophy—degeneration of the optic nerve.

Pinguecula—a small yellowish spot or lump on the conjunctiva at either side of the cornea, not generally of consequence for visual acuity.

Presbyopia—normally occuring loss of elasticity of the lens and ciliary muscle associated with aging, resulting in inability to focus on near objects.

It must be repeated that the foregoing arrangement of conditions which result in varying degrees of visual impairment is not an absolute classification system. Most of the defects described can be grouped in several of the categories. The orientation has intentionally been medical in the sense of diseases, infections, injuries, and disorders, while the group of refractive visual impairments has been minimized. At this point, the concern is that of giving some notion of the unique contribution of the physician, generally an ophthalmologist, in correcting visual impairments. Ophthalmologists are also involved in the correction of refractory disabilities, but this function is shared with optometrists to a large extent. The relationship will be made more clear in the chapter on measurement of vision.

Medical Treatment of Visual Impairments

Treatment of visual impairments by the physician entails a wide range of specific procedures and processes including examination, diagnosis, measurement of vision, giving medications, prescribing corrective lens, corrective exercises, carrying out surgery, parent and patient counseling, follow-up examinations, and making suggestions for educational placement. Space does not permit a detailed consideration of all these procedures, many of which lead to technical points which are of limited concern. The intention is to illustrate those conditions in which the physician has rather specific responsibility and to provide an indication of some of the procedures carried out. In so doing, it is hoped that communication among the professional team working with the visually impaired child will be improved, and the skills of each professional worker can be more effectively mobilized to serve the child.

Diagnostic Study

Referral sources. A few visual defects are identifiable at birth, but most visual impairments in children are not immediately recognizable. Referrals to the ophthalmologist of children thought to have visual impairments are made by other physicians and by parents. The child is unaware that he sees any differently than does any other person, at least until such time as he has acquired the background of experience out of which to make such a differentiation. This places a considerable responsibility upon the parent and other adults and has the added, and perhaps more serious, consequence of eye defects in children going untreated and growing progressively worse. There are guidelines and behavioral lists which can be used to rate the child's visual ability, but most of these are not satisfactory. Some children learn to use small residuals of vision with high degrees of effectiveness. Other children seem to be very poorly coordinated and are forever dropping objects, banging into furniture, and falling down steps. Consistency of performance contrasted with well described age-normative accounts of the development of visual skills such as those prepared by Gesell and Ilg will suggest gross visual ineffectiveness. Where there are doubts, a qualified ophthalmologist should be consulted. Many ophthalmologists believe children ideally should be routinely examined by an experienced and qualified physician at age two years because of the difficulty in otherwise detecting visual impairments and the urgency for instituting treatment for all defects as early as possible.

Examination of children. Techniques for the professional eye examination of young children are now widely available. Difficulties associated with the child's limited response potential (minimal language, unable to read, unaccustomed to following directions, and apprehension of new places and persons) can be rather easily counteracted by the skilled examiner. Patience on the part of the examiner, use of devices which do not require reading, observation of reactions to play-type materials, and cooperation from parents will do much to facilitate making an accurate assessment. Use of mydriatic medication (dilates the pupil) and training sessions will insure a satisfactory examination. Where it is deemed necessary, the examination can be carried out under varying stages of anesthesia. Assisted by these aids, the ophthalmologist can carry out an adequate visual examination of the two year old child, including detection of defects and making an acceptable assessment of degree of refractive error. This outcome is possible because examination of the eye is dependent on the visual observation of the examining physician.

Diagnosis of eye disorders. For the physician, diagnosis of an eye disorder has two implications. The integrity of the eye must be safeguarded and restored if possible as an organ for receiving light rays, and the degree of vision must be rendered as nearly normal as possible. Diagnosis is made on the basis of a history outlining details of

the patient's development, observations of the eye, and a study of responses to light stimulation. Identifying the type of eye defect is necessary for planning the course of treatment. Follow-up examinations may be required to complete the diagnostic findings. There is very little relationship between type of pathology and degree of visual loss. An individual with diabetes may have normal visual acuity or be totally blind. A person with color blindness usually has normal visual acuity. A marked nystagmatic condition may reduce visual efficiency to a severe degree even though acuity remains normal. These are some of the reasons why each child must be given an individual diagnostic study.

Causes of Visual Impairment

The exact number of persons with significant visual losses is not known. Available data suggest approximately one-tenth of one percent of the U. S. population have significant visual impairments. About one-tenth of that group are blind. Of those classed as blind, about five percent are below the age of 20 years. The number of children with educationally significant visual impairments is very small as compared to the number of children with other impairments. Less than 20,000 such children were in schools throughout the United States according to recent census data.

The epidemiology of visual impairments has not been satisfactorily ascertained, but there appear to be greater than expected frequencies at both extremes of socio-economic levels for exactly opposite causes of inadequate and of excessive medical care. The generally less favorable living conditions of the lower socio-economic levels contribute to a higher predisposition to all types of defects among persons from that strata. There appear to be "waves" of diseases or other practices which produce a high frequency of visual impairments for a time. Examples of this phenomenon are epidemics of virus type illnesses (a variety of measles) or the care given prematurely born infants (excessive oxygen). Causes of visual impairments are drastically different for adults and for children (under 20 years age). Among children, 60 percent of visual impairments result from prenatal (congenital) causes, 20 percent are caused by infectious diseases, 10 percent are attributed to accidents, and the remaining 10 percent are ascribed to miscellaneous causes.

Medications in Visual Impairments

Medications are most likely to be indicated in the treatment of inflammatory conditions. Infections of the eye, either from pathogens or from injuries, tend to be of a transitory nature and produce only temporary visual impairment even when the degree of loss is severe. Some infections, as measles, do not respond to medications. Other inflammations, such as conjunctivitis, respond rather quickly to medi-

cation. The importance of medications, which must be given only on the prescription and under the supervision of a physician, is a preventative function. Most inflammations can, if left untreated, have consequences of scarring which will produce permanent disabilities. Some infections are by nature chronic and produce progressively greater amounts of damage, usually by erosive destruction of tissue. Such chronic infections, and consequent visual impairment, can often be minimized by proper medications.

Surgical Procedures and Visual Impairment

Carrying out surgical procedures for the correction of eye defects and restoration of vision is an area in which there has been great advancement. Supported by improved instrumentation, medications for preventing dreaded post-operative infections, and more effective diagnostic techniques, surgery is a commonly invoked aspect of any treatment regimen. Formerly, surgery was considered a radical procedure limited to removal of malignancies or chronic degenerative eye residuals. Surgery is widely used to correct muscle imbalances in children. Cataracts, which seem to be increasing in frequency in children, can be successfully removed by a difficult surgical operation. Certain corneal and lenticular defects are corrected by surgery. Detached retinal patches are repaired by surgery. Newer techniques are designed to correct for congenital glaucoma and to exchange eye fluids which have become clouded and impermeable.

Surgery may be carried out to correct ptosis or to effect a more favorable cosmetic appearance. Where an eye is degenerative, removal and fitting with a prostheses ("glass eye") are examples of cosmetically oriented surgery. It is expected that there will be greater advances in the area of surgical procedures for correcting visual defects. Eye transplants and techniques for rebuilding and restoring injury destroyed or damaged eye components are only in the initial stages of perfection.

Other Treatment Procedures

The ophthalmologist frequently prescribes corrective lenses, a procedure which will be discussed in detail in the chapter on measurement of vision. There has been a heightened tendency to use exercises, systematic movements, and visual activities for corecting some eye disabilities. Mild muscle imbalances, some convergence difficulties, eye incoordination, and disabilities resulting from insufficient use of the eyes are examples of impairments which can be overcome by a systematic program of exercises. A commonly observed example of correction by exercises is the practice of occluding one eye and thereby forcing the other eye to work, strengthening its capacity to function in receiving and transmitting light rays.

It is obvious that the ophthalmologist engages in much counseling with parents of young children patients and directly with older patients. Attitudes of patients and parents are of great importance in influencing the patient's use of his vision. Frequently, there are particular activities or training which the parent or patient must be instructed to carry out in the home. Plans for treatment, especially where surgery is contemplated, must be approved and accepted by all concerned.

The Ophthalmologist in Relation to Other Professionals

Ophthalmologists tend to have many contacts with other physicians, generally those making referrals. These contacts are usually of an information sharing tone and involve discussions for the subsequent management of patients. Even though having different professional training and orientations, ophthalmologists work in close interaction with optometrists. The optometrist is concerned as to the presence (or absence) of a medically or surgically treatable aspect of a visual defect. The ophthalmologist frequently is willing to have the optometrist fit a patient with corrective lenses for whom no pathology was found.

The ophthalmologist is frequently called upon to consult with nurses and technicians who operate vision screening programs. This is an important responsibility since it is rather common to over identify visual impairments in screening programs. Reducing the amount of false identifications strengthens vision screening and conserves everyone's resources.

Possibly the most frequent association is the contact between the ophthalmologist and the teacher. Educational implications are associated with most visual impairments. The teacher is concerned with receiving a detailed accounting of the eye defect and visual limitations. Of special importance in planning an education program are characteristics of transitory, progressive, or stationary as applicable to the condition. Indications of the scope of the visual field and the degree of visual acuity are the basis for placing the child in a regular or a special classroom. Attitudes of the parents and child toward the condition can assist the teacher in talking over educational plans with parents. The teacher's daily observations supply valuable feedback and progress reports to the ophthalmologist. The teacher must be aware of the prognosis and be assured of routine follow-up of the visual condition by the ophthalmologist.

Summary

Most eye disorders are the result of injuries, infections, or congenital defects. Visual impairment is a frequent consequence. The treatment of eye disorders can require medications, surgery, correc-

tive lenses, or training in a special educational program. The habilitation of persons who have visual impairments generally requires all of these procedures in some combination. A physician, usually an ophthalmological specialist, is responsible for the medical and surgical aspects of visual impairments. Assessing vision and prescribing corrective lenses is shared by the physician with other specialists. Every child who has a visual impairment should have periodic examinations by a physician. An examination by a physician is particularly important in the initial stages of planning a total educational program. The ophthalmologist works in close cooperation with parents and teachers in assuring that the child is getting the most possible use of residual vision.

CHAPTER II.

MEASUREMENT OF VISION

Seeing an object is the end result of a complex series of processes, not all of which are fully understood. As is so for other bodily functions, mechanical, chemical, and interpretive activities are involved. Humans rely heavily on vision in carrying out life adjustment processes. The visual sense is highly developed, possibly the most efficient of human sensory abilities. The dependence on vision results in a concern that each individual has a minimum degree of visual ability. Deficiencies in visual ability have profound consequences including missing out on many normal learning experiences, reduced mobility, limited vocational opportunity and social-emotional adjustment problems. Many techniques are available for improving or correcting losses of visual abilities. Some conditions are readily corrected by prescription of appropriate corrective lens, others require surgery or medical attention. There is a limit to the applicability of any corrective procedure; treatment, then, becomes a matter of specialized training and education. In any case, no program of correction can be planned until there has been an examination of the visual system and a measurement of vision. This chapter presents the methods used to measure vision, functional classification of vision, and some of the problems encountered in fitting corective lens to improve losses of vision.

Mechanics of Vision

The eye has been described as a kind of cup-shaped organ, the inside of which is lined with specialized receptors for absorbing light reflected from objects in the area, or field, in front of the eyes. Every point, surfaces of objects, in the visual field simultaneously reflects light which strikes the receptors (rods and cones) on the retina. The entire pattern of light rays is absorbed and transmitted to the cortex for interpretation. The receptor lining of the eye mirrors the visual field. The center of the visual field is very sharply represented while the peripheral areas are less distinct. Movement of the eyes permits any object to be brought into sharp focus for viewing. The expansive area of the visual field is replicated with amazing detail in a surprisingly small area of the retinal surface. The image of the full moon has a diameter of less than .2 mm on the retinal surface, and yet a great amount of detail about the moon is contained within that small area. Lines only about one-eighth the width of a single receptor unit are easily seen.

Although rods and cones have been identified as the receptor units for picking up light rays, many functions which seem to be carried out by the retina are not fully understood. In addition to being absorbed by the retina, light rays undergo some processing which en-

tails analyzing, reporting contrasts, identifying lightness-brightness, noting edges and depressions, and monitoring of progression within the visual field. Studies carried out on eyes of infrahuman organisms suggest that there may be further differentiation of photoreceptors and specialization for performing these functions. The rods are concerned with vision in low illumination (darkness) and can react to the smallest measurable unit of light, a quantum. Night vision is achromatic. Light vision carried out by the cones yields the sharpest visual images and differentiates colors. Too much light can be more impairing than too little light as is illustrated by the blinding effect of sudden intense illumination. The iris regulates the amount of light admitted according to the degree of illumination such that lesser amounts of bright light are allowed to enter the lens.

The lens is possibly the most important component of the eye. The lens collects and concentrates the light rays. In so doing, the orientation of objects is reversed so that the image falling on the retina is "upside down." From the lens, the light rays pass through the vitreous humor and then strike the retina. The light rays are conical in shape with the wider top of the cone approximating the lens and the apex of the cone striking the retinal surface at the center of the cup shaped eye, a point called the macula lutea. There is a maximum concentration of rods and cones on the macula lutea, and a small depression, the fovea, on the macula lutea is the site of the highest number of cones. The importance of the macula lutea as an area for producing sharp visual images (acuity) is indicated by the fact that absence of the macula lutea results in visual deficiency equal to legal blindness. Once absorbed by the photoreceptors, light rays are converted to chemical neurohumoral compounds for transmission to cortical centers over the optic nerve.

Surprisingly, the eyes are in constant movement although they appear to be fixed since they give what seem to be stable images. The various movement possibilities of the eyes may be the basis of the important eye functions. These movements and associated functions are:

1. *Convergence.* The turning inward of both eyes to fixate on an object located within the focus area about 20 feet in front of the eyes.
2. *Accommodation.* Changes in the lens which thickens or "bulges" to focus on distant objects.
3. *Cyclofusional.* A precise rotational movement made independently by each eye turning about its axis to adjust so that light from an object strikes each retina in corresponding areas.
4. *Pupilary reflex.* Muscles of the iris change the size of the pupil to regulate the amount of light permitted to enter. A contracted (smaller) pupil restricts the amount of light, but

sharpens the retinal image and increases the depth of focus. A dilated (large) pupil admits more light as needed under conditions of low illumination.

5. *Conjugate.* These small but continuous movements of the eye, mostly along the horizontal plane, enable the eye to search and to follow rather than to depend entirely on light reflected from an object viewed. When viewing a stationary object, the eyes shift continually, making small *jump* movements. When observing a moving object, the eye moves in a *pursuit* pattern which permits the tracking of the moving object. Although made independently by each eye, these movements must be coordinated or a "double image" and blurring results.

Assessment of vision concentrates on measuring the adequacy of these movements which in coordination result in visual efficiency. Techniques are available for correcting some of the deficiencies that may be identified, but some defects are not correctable.

Definitions of Visual Impairment

The most important aspect of vision is the sharpness and clarity with which objects can be seen, and visual impairment is defined mainly in terms of measured visual acuity. Visual acuity may be ascertained in terms of the smallest object that can be seen at a specified distance, or on the basis of the smallest space between two lines in order for the lines to be perceived as separate. There are other characteristics of vision and deficiencies in perception of depth, color, light brilliance, and sustained visual performance may result in visual impairment.

Definitions of visual acuity. Invariably, instances evolve in which there must be some grouping and classification made of any impairing condition. Classifications may be gross, listing only general states such as mild, moderate, or severe, or they may contain a series of groupings such as the range of clothing sizes. In some instances, a gross classification is sufficient, for other purposes details of the condition are needed. It has been suggested that the importance of a condition can be judged from the degree of refinement in the classification of the condition. Even with highly detailed classifications, no one classification system is ever suitable for conveying all the information desired by every professional person. For this reason, each professional group is likely to develop a classification system which reflects particular concerns of that group. The result can appear as a confusing jumble of terms, figures, ratios, and graphs. Some order can be imposed by recognizing the importance of vision to our lives, and by accepting the varied types of specialists who are concerned with visual impairments.

In adults, visual impairment is frequently the consequence of accidents. In order to make compensation adjustments for these losses,

it was necessary to establish some system of guidelines to serve as a basis indicating the degree of loss. Measures of acuity were easily obtained and could readily be compared from person to person. Several of the more frequently used acuity based classification systems are summarized in Table I.

APPROXIMATE EQUIVALENT VISUAL ACUITY NOTATIONS

Distant Snellen	Near			% Central Visual Efficiency for Near	Point	Usual Type Text Size
	A.M.A.	Jaeger	Metric			
20/20 (ft.)	14/14 (in.)	1	0.37 (M.)	100	3	Mail order catalogue
20/30	14/21	2	0.50	95	5	Want ads
20/40	14/28	4	0.75	90	6	Telephone directory
20/50	14/35	6	0.87	50	8	Newspaper text
20/60	14/42	8	1.00	40	9	Adult text books
20/80	14/56	10	1.50	20	12	Children's books 9-11 yrs
20/100	14/70	11	1.75	15	14	Children's books 8-9 yrs.
20/120	14/84	12	2.00	10	18	Children's books 7-8 yrs.
20/200	14/140	17	3.50	2	24	Large type text
12.5/200 (20/320)	14/224	19	6.00	1.5		
8/200 (20/480)	14/336	20	8.00	1		

Table 1. Visual Acuity Notations

Legal blindness. The most popularly used classification is the Snellen notation which reports the person's ability to see a fixed size of print at a specified distance (20 feet). This measures distant or "far point" vision as contrasted to close or "near point" vision. Near point vision is involved in reading, sewing, and work at distances not more than about 20 inches from the eyes. Normal vision in Snellen terms has been set at 20/20. Losses of visual acuity up to 20/50 are usually not of much significance, but such losses assume increasing importance as vision decreases from that point. For legal purposes, visual acuity of 20/200 is defined as blind, as determined by the Snellen chart. Such persons may actually be able to perform many visual tasks effectively, as will be brought out in later discussion. Individuals with visual acuities in the 20/50 to 20/200 range have less than one-half the visual ability as does the average person and are considerably handicapped.

Medical classifications. The American Medical Association has established a widely used classification system which is oriented more to measures of near point vision. Emphasis is placed on reading, perhaps the most critical visual function. The base of the system is ability to see a fixed size of print at a specified distance of 14 inches. As with the Snellen chart, the print size is made larger while the distance stays constant in assessing visual efficiency. Normal vision acuity in the AMA system is 14/14 (inches). This is the equivalent of Jaeger 1, and Metric .37 (M), both referring to sizes of type letters used in printing.

Educational classification. For educational planning, the degree of vision which is usable for classroom learning is the primary consideration for classification of visual impairment. Visual demands for such varied classroom activities as viewing the chalkboard (dis-

tance), films, slides through a microscope, or reading printed materials, are different. Reading is the one most important source for learning for which visual demands cannot be easily modified or adjusted. Accordingly, those persons who have sufficient vision to read efficiently, even with corrective vision aids, are designated as partially seeing. These persons have difficulty in performing other visual tasks such as seeing the chalkboard, or films, or even in moving about. They may also be very slow readers. In Snellen Chart units, the educationally partially seeing ordinarily have measured acuities of 20/70 to 20/200 in the best corrected eye. Some children classed as partially seeing for educational purposes have visual impairments of a type that are not helped appreciably by corrective lenses. In other instances, they may have normal visual acuity, but be unable to use the vision for sustained visual functioning.

An analysis of a group of approximately 5,000 children classed as educationally partially seeing revealed the following distribution of Snellen Chart acuity measures for the best corrected eye:

Percent of pupils	Corrected visual acuity, Snellen notation
24	20/50 or better
16	20/50 to 20/70
30	20/70 to 20/200
21	20/200 or less
9	insufficient data for acuity

Table 2. Number of Pupils at Various Snellen Acuity Levels.

Interesting to note, approximately one-fourth of this group had measured visual acuity, at least for distant viewing, in the normal range. At the other end of the continuum, more than one-fifth of the group had such poor visual acuity that they could be legally classified as blind. These data serve to point out the necessity for making educational placement on an individual basis, rather than on the consideration of any one single measure. About ninety percent of all pupils found to have educationally significant visual impairments will be classed in the partially seeing group.

The smaller group of the educationally visually impaired are possibly the best known of all handicapped, the blind. The educationally blind are those persons who are unable to use vision as a major learning input channel. More specifically, they are unable to use vision in reading and must read by the braille system. The braille system of reading relies on raised dots or perforations which form letter patterns that are recognized by the finger tips passing over them. The educationally blind have measured visual acuities of less than 20/200 in the best corrected eye. In fact, their visual acuity is

so poor as to seldom warrant this type of assessment or the prescription of corrective visual aids. Attention is called to the point previously made. that not all persons having measured visual acuities of 20/200 or less are educationally blind. The usual visual acuity notations are of very limited use with the blind, some of whom have no eyes. A gross classification is sometimes used to report visual ability of the blind and can have use in some situations (mobility). These situations will be discussed in the chapter on education of the visually impaired. This includes:

HM—perceives movement of hands in front of eyes.

PLL—perceives and localizes bright light in one or more quadrants of visual field.

PL—perceives light, but is not able to localize source.

No LP—unable to perceive bright light.

The incidence of blindness increases with age, and the increase is rapid with the degenerative changes of aging. It is believed that less than one-tenth of all blind persons in the United States are of school age (below age 21 years).

Other aspects of visual impairment. The preceeding discussion has emphasized losses of visual acuity as the criterion for visual impairment. Acuity is the most frequently invoked visual function, but visual impairment can result from other types of defects. Dysfunctions of muscles which operate and support the eyes are possibly the second largest source of visual impairment. Most muscle imbalance conditions (indicated by suffixes of -opia or -tropia) are correctible and do not assume educational significance. Eye muscle imbalances classed as strabismus or nystagmus are often the basis of educationally significant visual impairment. Inability to differentiate colors ("color blindness") is a visual impairment which has greater vocational than educational consequences. Astigmatism and severe refractive errors constitute a major group of educationally significant kinds of visual impairment, possibly because of the limited extent to which these defects can be aided by corrective lenses. Deficiences in depth perception are of some educational consequence, but the limitation is greatest with respect to sports, driving, and vocational demands.

Not only does visual impairment exist in many degrees and in varied forms, it is also the result of different defects of the eye. Complete data regarding the factors which result in visual impairment are not available because the visual demands of the situation are probably the most important set of variables which determine whether or not a given person is to be classed as visually impaired. Illustrative of the variety of conditions which can result in visual impairment is the analysis of the group of approximately 5,000 pupils

classed as educationally partially seeing. In this group, it was found that forty-nine percent had refractive errors, twenty-two percent had developmental anomalies, ten percent had defects caused by diseases, and ten percent had eye muscle imbalances. For one percent of the group, the basis for the visual impairment could not be established. A study of causes of blindness for a smaller group of educationally blind children indicated these etiologies: fifty-six percent from prenatal influences, eight percent from diseases, five percent from injuries, nineteen percent from the action of toxins, five percent from tumors, and the remaining seven percent from unknown causes.

Measurements of Vision

Measurements of vision tend to assess the functioning of the entire visual system, even though it is recognized that visual disabilities are often the consequences of defects of specific components of the eye. The location of the defect can be inferred from the total performance of the eye in many instances. Other procedures used in measuring vision may identify defects on the basis of the observation of the eye with special instruments. A device for recording the electrical activity of the eye as light rays are processed is available, the electroretinogram (ERG). Efforts to use the ERG to show the function of specific parts of the eye have been unsuccessful to date, and it provides only a gross index which is of such little value that it is not included in most routine examinations of the eye. Attempts to analyze visual functioning by the selective presentation of controlled light spectra (light rays of fixed length, speed, and intensity) have similarly proved unsuccessful.

Vision is generally ascertained in a set of procedures which are collectively referred to as an "eye examination." A complete eye examination entails a comprehensive sampling of various aspects of visual functioning and is carried out by an eye specialist; a physician or an optometrist. Physicians specializing in disorders of the eye are specialists in ophthalmology or eye, ear, nose and throat specialists (EENT). Less frequently, the physician specializing in eye disorders is known as an oculist, but "ophthalmologist" is supplanting the other terms. Another eye specialist is the optometrist. The optometrist is trained in the assessment of refractive functions of the eye, the process of collecting incoming light rays and focusing them for absorption by the retina. Many optometrists maintain an independent private praictice. Others are staff members of eye clinics where they work in close cooperation with ophthalomogists. In any case, the two specialists enjoy a close professional relationship since there is an overlapping area of concern. The ophthalmologist will generally use a medication, commonly referred to as "drops" for the purpose of dilating (mydriatic agent) or of contracting (miotic agent) the pupil. The ophthalmologist is also concerned with identifying disease processes and pathology in the eye. The optometrist will note

evidence of disease or pathology and refer the patient to a physician. In other respects, the assessments carried out by the two specialists can be very similar, and each is authorized to make prescriptions for corrective lenses, or "glasses."

Several devices for assessing vision are manufactured. These are usually composites of a series of instruments and have common features of presenting fixed stimuli under fixed conditions of distance and illumination. They usually have a series of lenses for magnification. Each eye specialist will be found to have individual preferences for one or another set of equipment as being the more suited to his needs. Some of the common instruments, terms, and tests used in carrying out an eye examination are identified in the following list:

Acuity—the sharpness and clearness of an image.

Accommodation—adjustment of the eye, mainly by changes in the lens, for seeing objects close to the eyes (near, or near point) or at a distance from the eyes (far point).

Binocular—involving both eyes.

Convergence—turning the eyes inward to direct the visual axis for focusing on an object usually close to the eyes.

Dark adaptation—time required for the eyes to change to deal with low illumination light stimulation.

Depth perception—ability to perceive the solidity of objects and their relative location in space (stereoscopic vision).

Diopter—unit of refractive power of a lens.

Dioptometer—instrument for measuring angles of refraction.

Diplopia—the seeing of two images from a single object, "double vision."

Divergence—inability to converge the eyes.

Emmetropia—the refractive condition of the normal eye.

Dominance—the controlling eye, one which exerts the major influence or is normally attended or responded to.

Visual field—the entire area which can be viewed without shifting the axis of the eyes.

Focus—the point at which rays are converged after passing through a refractive device.

Foot candle—unit of light intensity.

Fusion—blending of images picked up by each eye into one picture.

Glare—direct or reflected light of such intensity as to be discomforting and impairing of vision.

Lens—a refractive medium shaped so as to concentrate or to diffuse light.

Light adaptation—ability of the eye to adjust to changes in bright illumination.

Lumen—unity of illumination, the amount of light given out by a lamp of fixed light intensity.

Maddox rod—prisms arranged in a lens to transform a single bright source of light in a single line.

Monocular—pertaining to one eye.

O.D.—oculus dexter, the right eye.

O.S.—oculus sinster, the left eye.

O.U.—oculus uterque, both eyes.

Ophthalmoscope—an instrument used for examining the interior of the eye.

Perimeter—instrument for measuring the field of vision.

Peripheral vision—ability to perceive objects outside the direct line of vision.

Refraction—determination of the course of light rays in passing through the lens.

Refractive error—the amount of deviation of the focus from striking the surface of the retina.

Refractometer—instrument for measuring refraction.

Retinoscope—instrument for examining the action of the retina in response to light.

S,SC—sine correction, without glasses.

Slit lamp—an instrument which provides a narrow intense beam of light used with a microscope to examine the cornea.

Stereoscopic vision—ability to perceive relative location of objects in space without aid of clues from shadows, size, overlapping.

Stereopsis—depth perception.

Suppression—ability to voluntarily not use one eye.

Tonometer—instrument for measuring intraocular tension.

Assessment of visual acuity. The most frequently measured aspect of visualization is the ability to see a well defined object at a certain distance under controlled illumination conditions. There is considerable justification for the widespread use and acceptance of this measure since it is determined by the efficiency of the eye components, nerve tracts, and cortical interpretation, all working in coordination. The Snellen chart which presents the familiar "E" and other letters of fixed size for the subject to recognize while standing at a fixed distance, was one of the first devices for measuring visual acuity and is

still in wide use. Other instruments for measuring visual acuity are based on this same principle. Looking at objects which are close to the eyes requires different visual functions from those involved in viewing objects at a distance from the eyes. The system for recording measures of distant viewing from the Snellen chart (base 20/20, indicating size of type read at 20 feet) has been carried over to the notation for measures from near point scales. A ratio of 14/14 designates the type size seen at 14 inches by the average person.

As a way of reducing the need to work with cumbersome ratios such as "14/28" or "14/21," these values of distance and print size have been converted into single digits in the Jaeger notation. The distance only is reported in the Metric system, and only the size of the print read is reported in the Point system. The Jaeger and the Point systems are gaining in popular use and can be the source of some confusion since they have some common values which are not equivalent with regard to visual acuity.

The fact that the Snellen and similar techniques require the subject to be able to read has restricted their use. Young children, for whom assessment of vision can be of especial importance, generally have not learned to read. To overcome this limitation, viewing cards for use in instruments measuring acuity have been developed with checkerboard squares (as in the Ortho Rater used by the armed forces) and using play materials or asking the child to report where a ball is located (as, "on the table"). The adaptations have proven especially valuable in the assessment of younger children. Another technique useful with younger children flashes pin points of light on a darkened screen, and the examiner observes the child's responses to these lights. A skilled examiner can carry out an acceptable assessment of the young child (less than 5 years age) on the basis of experience gained in observing reactions to the examination procedures and knowledge of visual defects.

The results of assessment of visual acuity are reported in summary form for each eye unaided, with glasses, with low vision aid, near and distant vision. The same measures are listed for both eyes. This is shown in Table 3, Record of Visual Acuity.

	DISTANT VISION			NEAR VISION		
	WITHOUT GLASSES	WITH BEST GLASSES	LOW VISION AID	WITHOUT GLASSES	WITH BEST GLASSES	LOW VISION AID
Right Eye (OD)						
Left Eye (OS)						
Both Eyes (OU)						

Table 3. Record of Visual Acuity

Measuring the visual field. The visual field is the area in which objects can be viewed without turning the head or the eyes from normal position. This is the expanse of vision. When vision is limited to the central area, the condition may popularly be referred to a "tunnel vision." When vision is limited to the outer edges of the visual field, it is known as "peripheral vision." The visual field is measured by an instrument called a "perimeter" and results are recorded on a chart for each eye separately. A chart for recording these measures is shown in Table 4.

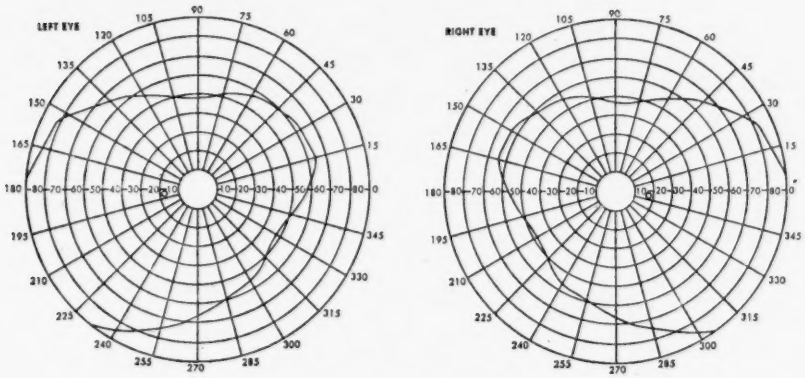

Table 4. Chart for Recording Measures of the Visual Field.

Measuring astigmatism. A frequent eye defect is the presence of uneven places on the surface of the retina which results in the light striking that point being diffused and spread out, rather than absorbed by the photoreceptors. A blurred, rather than a sharply defined image, is then perceived. The presence of an astigmatic condition is ascertained by responses to a chart with solid black lines radiating out at 10 degree intervals of a circle. When the lines appear equally sharp and clear, there is no interference. If an astigmatic condition is present, certain parts of the lines will be seen as blurred or "fuzzy." This impairment is of considerable importance for sustained visual effort such as reading.

Measuring muscle balance. Convergence, the -tropias and the -phorias, are all types of movements which are revealing of the coordination of eye muscles in directing the eyes for focusing on an object. Indications of eye muscle imbalances can be gained by observing the movements of the eyes in focusing and changing focus, and from responses to printed card inserts which are part of the materials included in most eye examination instruments. The degree and direction of deviation (turning) are recorded for each eye.

Measuring stereopsis. One aspect of vision is the ability to locate

objects in space. Sometimes referred to as depth perception, stereoscopic vision is concerned with orienting objects according to their relative distance in the visual field. In pure form this is accomplished without reference to usual clues as shadows, size, or overlapping. This is an important ability in manipulating automobiles and other moving vehicles, and in some sports. It is measured by several procedures, generally requiring the subject to place objects in a parallel position equi-distant from the eyes.

Measuring light adaptation. Aspects of the capacity of the eyes for adjusting to changes in light intensity include brightness adaptation, darkness adaptation, and glare. A considerable length of time is required for the eye to make an adjustment for dark adaptation. Reactions to bright light are made more quickly. Dark adaptation is seldom assessed completely, but a tendency for making such adjustments is observed. Reactions to brightness are usually assessed as is the capacity of the eyes for handling excessively bright light, or glare. Inability to screen out excess bright light, either by the normal action of reducing the size of the pupil or by the normal action of the nontransparent pigmented layers of the retina, can seriously impair vision and even give rise to sensations of pain.

Measuring intraocular tension. Excess pressure within the vitreous cavity can distort the normal shape of the eye ball or prevent the changes in shape ordinarily made in accommodation adjustments. The degree of tension within the eye is ascertained by an instrument called a tonometer.

Measuring color vision. Ability to differentiate colors has assumed increasing importance in the modern world where living demands entail greater responses initiated by color cues. Acuity is not usually effected by this type of impairment, popularly called "color blindness." There is seldom a total inability to differentiate pure colors, but the impairment manifests itself as a consistent confusion in differentiating various shades of colors. Red and green identification are the most frequently impaired. Responses to color are generally measured on the basis of ability to identify numbers and letters printed on a card with a background of colored disks. The Ishihara Color Plates are widely used to assess ability to identify colors. The American Optical Company charts are possibly the most generally used in the United States.

Carrying out an adequate visual examination is a detailed technical procedure which can only be accomplished by a skilled specialist. A single session may not provide all the necessary information needed to give a picture of the individual's visual abilities. Periodic re-examinations are required, the length of time between examinations can only be specified by the examining specialist. The eyes are constantly changing, but changes may occur at a faster rate in some growth-maturation periods.

Fitting Corrective Lenses and Visual Aids

Skill in making corrective lenses, or "glasses," has been advanced greatly since Benjamin Franklin's early invention of a clumsy contrivance. There are very few persons in the United State who do not at some period in life find glasses are necessary to secure desired degrees of visual efficiency, at least for some situations. The perfection of corrective lenses has provided an invaluable assistance in maintaining the high degree of visual efficiency required by our life style. It is possible that there would be much more widespread visual impairment without this corrective procedure.

Corrective lenses. The common corrective lens, "glasses" or "spectacles," consists of an arrangement of optic lenses in a frame supported by the ears and nose. Corrections for most eye defects can be incorporated into a lens; refraction errors, astigmatism, glare, muscle imbalances, displacements of the shape of the eye ball, to list the more common defects. The most frequent condition for which they are prescribed is correction of a refractive error. Not all persons wearing corrective lenses would meet criteria for educational classification as visually impaired, and not all the educationally visually impaired can benefit from corrective lenses. Most visual impairments can be aided by proper lenses. Technical improvements have made it possible for lenses to be relatively light in weight, cosmetically attractive, and to contain corrections for several defects in a single lens. The development of plastic materials or "safety glasses" has reduced the danger of damage to the eye from breakage, a boon to active youngsters and to persons in hazardous occupations.

Most persons realize immediate benefit from lenses and wear them readily. Young children may request them even when not needed. When correcting for a congenital condition, some training may be necessary since the child is unaccustomed to such clarity in vision and may feel overwhelmed by the mass of new stimulation. The guidelines for glasses are simple.

1. They should be fitted only on the prescription of a qualified eye specialist who has examined the person.
2. They should be worn as directed by the prescribing specialist.
3. Periodic re-examinations as scheduled by the prescribing specialist should be carried out routinely.
4. They should be given reasonable care to avoid being broken or becoming scratched.

Surgery, medications, or corrective exercises may be sufficient for correcting some forms of visual impairment. For many types of educationally significant visual impairment, a combination of all these procedures and corrective lenses will be required.

Contact lenses. The most recent development in corrective lens is the contact lens, a comparatively small refractory glass worn directly

over the pupil. Contact lenses are held in position by a fluid hydrostatic arrangement and are not readily noticed. They are comparable to the spectacle type of framed lens in the kinds of impairments they can correct. Contact lens have become very popular because of their greater cosmetic appeal and because they have some advantages such as not being easily knocked off or broken in many physical contact situations, such as contact sports. Contact lens are rather expensive and require considerable skill for proper insertion on the eye. They are not tolerated by some persons and should be accepted only after consultation with and on recommendation of a qualified eye specialist. They are generally not considered suitable for use by young children.

Low vision aids. A third type of device for increasing acuity is a group of visual aids which are not worn on the person, but are helpful to many individuals who have extremely limited degrees of vision. Low vision aids are designed to provide high levels of magnification, approaching that found in some low power lenses on microscopes. They tend to be bulky and are cumbersome to operate because they are made up of a series of lenses. Some are stationary, others are portable. They may require about as much space as a school desk occupies, must have good illumination, and room for the person to move around them when using the device. The preferred arrangement is to have an illumination source built into the instrument.

Low vision aids place considerable restriction on the mobility of the user and are generally not very satisfactory. Low vision aids illustrate the difficulty in seeking to correct all visual losses by magnification. The more the center of the visual field is enlarged by magnification, the less that can actually be viewed by the observer. The cost of being able to see less, but more clearly, is the omission of almost the entire visual field. The loss seldom balances the gain, but this is a matter which must be decided by the individual in consultation with his eye specialist. Low vision aids can be of help and are in common use by coin collectors and stamp collectors. They may be of greatest help to the person by reducing visual fatigue. The same guidelines suggested for governing the prescription and use of corrective lenses are applicable to the use of low vision aids. Low vision aids are often complicated for younger children to operate.

Vision Screening

Adults who have had years of effective vision are readily able to detect any loss of visual ability, some even anticipate naturally occurring losses. The situation is very different with respect to children who have visual losses. The child who has never known normal vision has no standard for comparison and may go for years believing every one sees just as he does. Even when children begin to lose visual ability, they may regard this as a natural occurrence, part of the complicated processes of "growing up." The child with a visual

impairment is likely to go unidentified, making for adjustment difficulties as he experiences more than the usual amount of failures. Of greater possible consequence, the earlier a defect is identified the better the prospect of correction. These factors make it urgent to have some systematic program for screening the visual ability of children.

Eye specialists believe all children could profitably be given a visual examination during their second year. They point out that the average child of two years can cooperate sufficiently to enable an examination to be carried out. There is a decrease in the probability of success from intervention efforts initiated after age three years. Early detection of visual impairments is imperative in consideration of the great demand for adequate visual ability the child encounters, especially as he enters school and begins formal education activities. At the present time, it is not practical to have an eye specialist carry out an examination of each child. A more realistic approach is to develop a well planned community based screening program which may be supervised by eye specialists. Certainly the success of such a program will depend upon cooperation and support from all professionals and from all community agencies which offer services to children.

Health professionals (nurses, physicians), optometrists, schools, and parent groups are a minimum coordinating group for initiating and carrying on an adequate vision screening program. Reliable equipment for effective screening is available at moderate costs and offers operational simplicity which makes it feasible to provide regular community screening programs. Public health nurses and school nurses are usually trained in such techniques. Where trained personnel for operating the screening equipment are not available, the eye specialists in the community should provide the necessary training. Procedures for making the initial screening, recording results, carrying out re-checks, and a procedure for making ultimate referrals to an eye specialist must be arranged in all detail. To identify a possible visual defect and to advise the child's parent without offering follow-up sources is only likely to add to the problem. It is urgent that one person be given responsibility for directing the vision screening program, including seeing that children are re-checked and that follow-up recommendations are carried out.

An important part of the vision screening program is working with parents. Parents can be made aware of the important signs of visual impairment, but more important, they can be convinced of the advisability of bringing the child to the screening center and following up on recommendations made on the basis of the screening test. Carefully selected parents can perform valuable services on a voluntary basis which contribute to the success of the screening program. Providing transportation, helping with records, and babysitting siblings not of the age being screened are some important functions parents can assume.

Ideally, a community vision screening program should be closely integrated with the schools. It is true that the desirable aged children (aged 3 years) are not in school, but they are being accepted in early school programs in increasing numbers. For the present, they are potential students who will shortly be regular school attendees. They also have siblings or friends from whom they know about school. The school tends to be centrally located in the community and relatively easily accessible to everyone. Finally, the screening made before the child enters school should only be one of a regular continuing series of screening tests given on a periodic schedule such as age 6 years, 9 years, 12 years, and 15 years. These ages would certainly involve pupils entered in school.

The source of the greatest difficulty in managing vision screening programs centers about the handling of referrals and follow-up examinations. Where effective, a vision screening program will identify children who have potential visual defects, a possibility which must be verified on examination by a qualified eye specialist. This means that more children will be seeking the services of the eye specialist. A few of these children will be found not to have need of the eye specialist's services; they will fit the common term, "over-referrals." It is the responsibility of the eye specialist to interpret such consequences to the parents as something of considerably more importance than an unfortunate waste of time and money. The advisability of having a continuous vision screening program is attested to by the fact that state departments of public instruction, state societies for the prevention of blindness, state health departments and other public agencies stand ready to direct resources and assistance to communities wishing to implement vision screening programs. Technical consultants, ratings of the performance of equipment, materials, valuable advice, as well as standards, forms, and criteria where these have been specified, are generously made available.

Screening tests usually assess visual acuity, far-sightedness (hyperopia), and muscle imbalance as a minimum. Instruments generally rated as acceptable for these visual functions include:

Bausch and Lomb School Screener
Keystone School Screener
Titmus School Screener
Massachusetts Vision Test

Persons in communities where there is a vision screening program should become familiar with the program in all details, including personnel, instruments used, ages at which children are examined, follow-up and referral procedures, and method for recording outcomes on the child's health or permanent record folder.

Interprofessional Relationships and Visual Impairments

There is relatively little possibility for confusing visual impair-

ment with other conditions. Occassionally, an emotional problem may be expressed as an hysterical blindness, and psychological and/or psychiatric consultation may be indicated. Such cases are rare and practically always seen in adolescent or older persons. The physician and the optometrist find frequent occassion for consultation and cross-referral because of the possibilities for defects causing visual impairment requiring medical treatment as a part of their correction. Eye specialists also work in close cooperation with nurses, especially where the nurse may be involved in vision screening.

The most frequent consultation contacts take place between eye specialists and teachers. Teachers are aware of the importance of adequate vision for the child's successful school adjustment and seek professional assistance for any child who gives indications of a possible visual impairment. Special teachers who are assigned to work with the partially seeing or the blind are particularly concerned with having opportunities to consult with the eye specialist providing services to their pupils. The teacher is able to observe the child's daily use of his vision, to note changes in visual efficiency, and to guage the child's progress in response to treatment or corrective procedures. In recognition of the important role of the teacher, many eye specialists visit classrooms for the visually impaired and make the acquaintance of teachers. Frank and open communication contacts between the teacher and the eye specialist can greatly facilitate the visually impaired child making a successful adjustment.

Summary. Essential to the treatment and correction of visual impairment is the identification and diagnosis of the condition. Referrals of children who may have impaired vision originate from parents, physicians, teachers, and vision screening programs. A detailed measurement of all aspects of vision is an essential part of the diagnostic study and must be carried out by a qualified eye specialist. The eye examination is the basis for subsequent treatment which may involve medications, surgery, eye exercises, or the prescribing of corrective aids, generally eye glasses. It is unrealistic to believe vision is stable, especially with regard to that of children. Losses of visual acuity associated with refractive disabilities are the major type and cause of visual impairment. Regular follow-up evaluations, at least by a well managed screening program, are a necessity. Many types of visual impairments are correctible, but some cannot be benefited. Educational management becomes an important aspect of treatment for the partially sighted and the blind. Close cooperation between the teacher and the eye specialist facilitates the visually impaired child making the best school adjustment.

CHAPTER III.

CASEWORK SERVICES FOR THE VISUALLY IMPAIRED CHILD

Contributions for improving human welfare made by the field of casework services are vast, but those services supplied the visually impaired child have proven especially exemplary. Programs which emphasized working with the family as a unit originated in Boston, Los Angeles, and Chicago. Counteracting the prevailing belief that the visually impaired child must be given a protective shelter for development, these programs demonstrated that optimal development for the visually impaired child is to be found in the same comfortable give-and-take family relationship as enhances optimal development for any child. This chapter will outline procedures for supplying parents with the sound guidance which will permit the parent to handle their child constructively. Although a normal personality development is a realistic possibility for the visually impaired child, attaining this expectation places special demands on the parents and family. Casework services in the form of standby resources of understanding, ingenuity, energy, and emotional support can sustain a parental feeling of confidence. Assuredness on the part of the parent is likely to generate the same desirable attitudes of personal security and esteem in the child.

Casework Services. The ways in which an individual meets demands for living are generally a continuation of the ways he has become accustomed to using in getting by within his home and family. Obtaining a picture of the person's home and family can contribute significantly to understanding the nature of his adjustment. Contacts with the home and parents indicated that some of the socialization processes could be altered and manipulated with positive influences for the child. Relationships between people, experiences in finding out about the world of people, and the resources available for the individual are areas on which the caseworker concentrates. The caseworker has come to be identified as a social worker, acknowledging the importance of social relationships and processes. The terms "caseworker" and "social worker" are used interchangeably in this discussion.

Casework is a way of working with people to enable them to develop more effective and acceptable resolutions of problems in everyday living. The caseworker recognizes that each individual is a member of several groups (family, neighborhood, school) and reciprocally influences these groups while being influenced by the group in turn. Activities engaged in by the caseworker include:

1. Study of the home by compiling an account of resources available in the house and including descriptions of the capabilities and willingness of family members to help the child.

2. Assessment of the community and its resources and facilities for helping people (hospitals, professionals, schools, clinics, recreation).
3. Coordination of resources in home and community.
4. Personal contacts with individuals (interviews, counseling).
5. Contacts with groups (consultations, group counseling).
6. Social planning consultation (community planning boards).

As applied to the visually impaired child, casework services seek to create a situation in which the child can continue optimal development. Any stinting of contacts with people or restriction of experiences incurred as a child will result in less than maximum realization of potential as an adult. The social worker uses interviews, counseling, play therapy sessions, and home visits as some of the techniques for accomplishing these professional objectives.

Safeguarding Development for the Visually Impaired Child

Formerly regarded as a period of relatively little importance, the years from birth to the start of formal schooling are now recognized as the truly formative years, a time when the major patterns of personality are structured. The child needs to experience relationships with people, with objects, with processes, and with himself in order to have all the advantages from this period. Most of these relationships are of a reciprocal nature, and the "personality" of an individual is, in the most basic terms, only the organization of these mutual exchanges between a child and his surroundings. The child must have affection and trust extended to him in order to be able to return the same measure. Muscles and senses must be exercised to discover what they are capable of doing. Exploring, trying things out, making mistakes, remembering, naming, and thinking are all essential activities for acquiring feelings of responsibility and confident expectations of accomplishment.

Every experience which a child has influences him. He may be encouraged to keep trying and to keep reaching out, or he may feel it is best to withdraw and retreat. The equipment a child has for responding to his surroundings will place certain restrictions on his activities. In this sense, the visually impaired child is limited in what he can do. Vision is used extensively in our society. The degree of limitation associated with an impairment in the visual mechanism varies over a wide range from no vision to that which replicates normal vision in many situations. The child whose vision is impaired can be expected to have a different perspective of his surroundings. Regardless of how he sees, the vision impaired child has the same basic needs and requires the same growth experiences as does the seeing child. Each child is an individual with unique potentials for coping with his surroundings. A visual impairment is best regarded

as an individual difference which must be taken into account in planning an appropriate set of developmental experiences for that child. Casework services have much to contribute to the developmental sequence, insuring that the visually impaired child is more likely to have the opportunities and the assistance required for successful adjustment.

Signs indicating possible visual impairment. The consequences of a visual loss are observable in the behavior of a person, a fact which has advantages and disadvantages. When the disability is observed by some persons, the visually impaired person may be subject to unwanted attention and sympathy. A more important consequence is the possibility for early detection, and the setting in motion of an appropriate treatment program. The advantage of such early identification and treatment cannot be underestimated and may contribute greatly to the generally more favorable outcomes for the adjustment of the visually impaired as compared to that of other disabled persons. Identification of a visual impairment can be a relatively simple procedure if a few generalizations are followed. An important consideration is to remember that the child born with a visual limitation has never known "normal" vision and therefore has no basis for comparing his vision with that of others. In a similar way, the child with a progressive visual loss may regard the change as a developmentally normal occurence and be slow to recognize and to question the loss. A final point to remember is the necessity for having a child seen by a qualified professional eye specialist whenever any doubt exists as to the child's visualization.

A total loss of vision (blindness) presents very little problem of identification. Partial losses in vision can be difficult to identify. Visual ability is a complex skill which follows normal developmental lines. This means that an older child will appear to have "better" vision than will a younger child, and that vision will generally seem to improve with age (experience). When performance is reduced by a visual loss, the reduction will be a consistent one. Inconsistencies are the result of not paying attention or of lack of interest. Comparing the child with other children his same age can be a useful guage if the comparison includes several children rather than a single child. Keeping these guidelines in mind, the following behaviors should be regarded as indicative of a visual defect which warrants additional study by a qualified eye specialist:

1. Covering one eye with the hand or eye lid when doing precise seeing.
2. Closing the eyes and pressing on the eyelids briefly before trying to view distant objects, such as on a chalkboard.
3. An eye that turns inward or outward all the time or occasionally.
4. Turning the head to an unusual position to view an object intently.

5. Rubbing the eyes and frowning when viewing an object intently.
6. Excessive bumping into things, stumbling, or awkwardness in movements.
7. Disinterest in everything that requires intentional sharp viewing.
8. Complaints of headaches and nausea associated with intensive viewing.
9. Chronic reddening or crusting of the eyelids.
10. Difficulty in reading.
11. Holding printed materials in an unusual position, tilted or nearer or farther than usual distance from the eyes.
12. Consistent complaints of dizziness or blurred vision.

When the parent has some doubt, it can be helpful to have another person make similar observations of the child. Where several of these signs are noted, it is best not to delay having the child seen by an eye specialist.

Working With Parents

Explanations of developmental outcomes have depicted parents, especially the mother, as the point about which the processes of development center. The attainment of maximum individual potential requires more than satisfying the nutritive needs of the child, but a socially and emotionally healthy child is not guaranteed by endless amounts of parental love. Reality considerations in establishing expectations, recognition of successes gained by personal effort, and a mutual give-and-take relationship are factors conducive to a propitious developmental outcome. Parents in and of themselves may not be essential for a favorable developmental outcome. In our society, however, parents hold a key position for influencing developmental outcomes simply because they are generally the persons with whom the child has the most contact in the early formative period when the trends for subsequent development are established.

What the family can contribute to the child. The necessity for obtaining food, clothing, and shelter essential for the physical growth of the child may have influenced the formation of the family unit in society. The family gradually assumed responsibility for other kinds of growth requirements; emotional, social, and intellectual. Development is the integration of growth and maturation in these areas. Providing adequate experiences and opportunities for development to occur is a demanding challenge for the family. The way in which a child is accepted by the family, the kinds of stimulation available, and the types of behaviors encouraged are considered by many child development specialists to be of great importance for influencing the sort of adult the child will become. Physical development of the visually

impaired child cannot be neglected; it is, in fact, of equal importance with the attitudes which the child will form about himself.

The visually impaired child must learn to compensate for his visual loss. Greater reliance must be made on those unimpaired sensory systems of touch, taste, hearing, and smelling for coping with the world. Experiences in the family provide the child with his first adjustment opportunity. The niche made in contacts with the family becomes the prototype for all subsequent efforts to deal with other situations such as school, other people, work, marriage. The child must also acquire proficiency in the socially accepted modes of communication. Roots of the verbal language which prevail in our society are gained in the early family contacts. Feelings of success, personal worth, willingness to try, and a confident understanding of himself are the desired outcomes of the early contacts between the child and the family. These outcomes can be influenced by casework intervention techniques.

Impact of the visually impaired child on the family. The presence of any child imposes responsibilities on the family. Most of these demands must be met by parents since the parents are usually the most able persons in the family group. It may be that the visually impaired child makes quantitatively greater demands of parents than does a normally seeing child. Certainly it can be said that more time is required for explaining and showing the visually impaired child the many features and aspects of his surroundings. It is also possible that the demands made by a visually impaired child are only qualitatively different and are time consuming because they entail responses and reactions which are not ordinarily used with the seeing child. Appropriate to this, we do not usually communicate with children in terms of the touch, taste, or smell attributes of the world, even though children are allowed to use these sensory channels at their own discretion.

Although one of the less frequently encountered impairments, studies of people's attitudes indicate that loss of vision is the most feared of all handicaps. Parents may be told by their physician that a child is blind. The physician may be basing his statement on a legal definition of blindness. The child who is legally blind can have a considerable residual of vision, creating the basis for much confusion unless a more complete interpretation is given the parents. Parents may observe that the child sees some objects and question whether the child has any loss of vision. Doubting the physician's competency, parents may go searching for other professional opinions. The child may be expected to perform visually at a level far above his capability. In other instances, the parents may accept the physician's statement and embark upon a protective pattern for dealing with the child. The desire to protect the child can result in the child being denied the chance to use residual vision with consequent progressive decline in the small amount of remaining vision.

The prevailing fear of being blind suggests that loss of vision will evoke strong emotional reactions from other persons. Parents are especially vulnerable to such reactions. Blindness may be accepted intellectually by the parent who then attempts to establish a normal emotional relationship with the child. A converse situation is often observed with the partially seeing child. The small amount of vision possessed by the partially seeing child seems sufficient for enabling the parent to establish an emotional relationship. The visual defect is not reacted to objectively, however, and parents seem inclined to believe that some miraculous discovery will restore full normal vision. Whether the visual loss is total or partial, the stage setting holds sufficient ambiguity for distressing the parent-child relationship. Additional sources of stress are generated when there are other children in the family with whom the visually impaired child must compete and be compared. The siblings must share some of the responsibilities of assisting their visually impaired sibling and must answer countless questions from well-intentioned outsiders. Siblings must deal with the fact that parents spend a proportionately greater amount of time with a visually impaired sister or brother. Siblings and parents may share a prolonged concern about the potentiality of a visually impaired child ever to assume independence.

Approaches for Working With Parents. The majority of the child's contacts with the world take place in his home and in association with his family. This is true for all children and is not altered by the child's attending school. The family and home represent powerful resources for assisting the child. Parents must be involved in any intervention effort since they direct, organize, and carry out most of the activities in the home. Perhaps the most important contribution made by the caseworker for assisting the visually impaired child is the contact with the parents. The caseworker compiles a detailed account of the home and its resources. In addition to the objects and arrangements in the home, all potential sources of treatment in the neighborhood must be noted (recreational, educational, social and medical). The initial phase of a home study is culminated with a description of the interactions between family members with special attention to the status of the visually impaired child within the family group. Although more difficult to identify, values, social objectives, and child rearing practices are generally of more significance in planning than are the number of sleeping rooms or annual family income.

The caseworker is careful to assess the parent and child interactions. Having a visually impaired child can evoke a variety of parental reactions. A parent who has been advised that a child is blind may very honestly set out to protect and to shelter the child. In so doing, they find pride in being "good parents," and it is difficult to convince such parents that the child can pay a high cost for their efforts. Dependency and lack of normal right to experience are consequences of too much parental involvement.

Another type of parent-child relationship develops when parents are puzzled as to why they should have a disabled and less than perfect child. Parents who are plagued with personal uncertainties may interpret such a circumstance as an added indication of their imperfections. Strong parental feelings of guilt about having an impaired child can arise when one parent seeks to blame the other and regards the child as an unfortunate victim of a poor choice made by the parent. Irrespective of the origins, guilt feelings tend to favor a marked component of atonement in the parent's relations with the child. Giving in to the child, over-permissiveness, and showering the child with material possessions create an unrealistic climate which, if not corrected, makes it difficult for the child to continue normal growth and development.

A third parental reaction which, although made in all sincerity, can have devastating consequences for the visually impaired child involves unrealistic expectations directed to the child. The parental expectations may be high standards which are impossible for the child to attain (putting on clothes of the proper shades, meticulous grooming of hair). An equal potential for damage is found in parental expectations which are far below what the child is able to do (continued dressing of the child, feeding an older child). Because of his limited vision, the visually impaired child is probably more vulnerable to having too many things done for him. Whether unrealistically high or low, inappropriate parental expectations deny the child a chance to do his normal share in contributing to the family welfare and create a basis for doubts about his competency.

Working with individual parents. The caseworker's first contacts with the parents may be directed to the objective of helping the parents to accept the child. The caseworker must have a working knowledge of the child's visual defect, including present limitations and prognosis for future functioning. The parents must be convinced that a visual defect, even a complete loss of vision, does not render the child totally disabled. The caseworker must have information about the child's assets so as to counteract parental pessimism with positive accounts of what the child can do.

Continued contacts with the parent are used to initiate desired patterns of parent-child interaction. Parents must be shown practical ways for introducing the vision impaired child to the world. Demonstrations which the parent can observe are preferable to verbal explanations of "how to do it." The caseworker should take advantage of normal developmental activities for showing parents how to work with their visually impaired child. The approach must use intact senses of hearing, touch, taste, and tactile modalities for making contacts with surroundings.

Some parents feel more comfortable when contacts with the caseworker take place in the home. This can be a fortuitous arrange-

ment since it provides a natural opportunity for the caseworker to carry out actual demonstrations and to observe interactions among the family members. The caseworker can reinforce desired parental reactions and quickly intervene to correct undesirable responses. Signs of healthy progress are suggested when a previous pattern of working with the child is no longer effective (the child has outgrown it), when the parents express normal feelings of anger toward the child (even a blind child can be annoying at times), and when the child has established a normal niche within the family group (pulls his own weight). At this point, the frequency of contacts with the parent may profitably be reduced.

Working with groups of parents. Originally thought of as a way of providing more services from professionals who were in short supply, working with groups of individuals has developed into a technique which has its own unique advantages and indications. Most community service agencies have groups, and parent groups are as much a part of the school as is the classroom. Even when parents are being seen on an individual basis for counseling services, they often participate in sessions attended by parents who have common problems and concerns. The caseworker newly assigned to a school program serving visually impaired children should check to see if parents are participating in groups which can be of the most direct assistance in answering their needs. If this is not so, then the caseworker must begin to organize specific interest groups which will allow the funneling of service to the parent and child.

The advantage of group as compared to individual counseling is more than the simple spreading of the skills of the professional worker to a group rather than a single individual. The real benefit derives from the group strength, the support and encouragement coming from other group members. Parents gain confidence in being able to help their visually impaired child when they listen to other parents describe how they successfully coped with the same problems. Parents who have successfully reared a visually impaired child feel a sense of added accomplishment in being able to help other parents engaged in the same struggle. It is seldom that any technique for correcting a problem will work successfully for all persons. This means that new and different ways for solving the problem must be given in the counseling sessions. The demand this imposes on the caseworker is greatly reduced by having the group members as resource persons who are capable of supplying ideas for correcting the difficulty.

A certain amount of information giving takes place in all counseling sessions. Group counseling sessions may emphasize the exchanging of techniques and ways for meeting real problems in contrast to individual sessions where feelings and emotional attitudes are more likely to be the focus of discussion. The caseworker can take advantage of the information giving focus of group sessions by

bringing in outside speakers, such as ophthalmologists, optometrists, child development specialists. and vocational placement counselors. Parents are particularly pleased to have adult or other older-than-their-child visuallly impaired persons come and talk to the groups.

Emphasizing information sharing and specific problem solving is preferable to structuring the group sessions as places to ventilate and express emotional feelings. Parents of visually impaired children are likely to have strong emotional feelings about themselves and their children. Emotion is contagious and, if unchecked, will swell to levels which are not easily managed in group situations. The resulting turmoil can be disruptive and a source of guilt feelings which reduce efficiency. Restrictions on the expression of emotional feelings must not be confused with denial of expression. In many counseling sessions, expression of emotional feelings is desirable and even necessary. Such expression can best be controlled, and is therefore more likely to have constructive consequences, in the privacy of individual counseling sessions. The caseworker must be alert for group members who will need to be referred for individual counseling sessions.

Casework Services With Children

Although contacts with the parents may predominate, the caseworker seldom works exclusively with parents. The resources represented in the caseworker's professional skills are often made available in direct contacts with the child. Infants and very young children are more subject to influences from changes and alterations in their surroundings. It is usually more effective to work with the young child's parents to create a situation which will favor optimal personality growth. With age, the child's personality structure becomes less influenced by factors in his surroundings. This fact makes it advisable to consider re-arrangement of the existing personality patterns in order to modify adjustment. Very simply, the older child has more personal resources which can be drawn upon in meeting adjustment demands. The older child is more likely to profit from participation in direct counseling sessions and may actually strengthen personal resources for adjustment as a result of the integration of his experiences in counseling.

In the schools, counseling services are usually made available by teachers, guidance counselors, psychologists, and social workers. Services are offered to pupils and to parents. Historically, the schools have worked in close cooperation with parents, and it seems advisable to adhere to this precedent in the delivery of counseling services. Counseling services provided by the school staff are, in fact, best represented and regarded as only a particular kind of educational program, rather than being viewed as treatment for curing ill persons. This means that parents should be apprised when counseling services are given to their children. In this way, the total resources of the parent and school partnership are maintained. Of greater

significance is the protection for the pupil who may be forced into a situation in which an insecure parent, feeling threatened by the counseling arrangement, unleashes anger and hostility on the vulnerable child.

It is difficult to formulate a general rule which will serve to indicate the degree to which parents should be informed of the details discussed in counseling sessions. On the one hand, parents themselves vary in their capacity for meeting demands and for tolerance of stress. One of the objectives of counseling is to strengthen the child's capacity for maintaining himself using his own resources independently of his parents. Particularly when working with older pupils, discussions may touch on topics which can be highly threatening to some parents (sex behavior, smoking), but which are essentially normal developmental phases. In the final analysis, each worker must decide for himself as to how much and with whom details discussed in counseling sessions are to be shared. It is important to share such decisions with the pupil. There is no justification for reporting details which are inconsequential, which the parent is unable to tolerate, or for which the parent is unable to be of assistance to the child. The decision to share information revealed in counseling should be dictated by the probability that such action ultimately will have favorable and constructive consequences for all concerned.

Counseling with Elementary School Aged Pupils. Working with the pre-adolescent child entails a combination of approaches which attempt to change the child's surroundings and those which seek to strengthen the child's own resources for dealing with demands he encounters. All assistance provided the child should be geared to his current developmental stage and must be appropriate to the child's capacity for coping. In some instances, sessions may be oriented to careful observation of the child with the object of acquiring a clear picture of the child's predicament. When the worker has the details of the child's feelings about his home, family, and parents, the parent may then be approached with assurance of what needs to be altered to remove barriers which are impeding normal development. For example, assigning household jobs may encourage a visually impaired child to feel a real part of the family.

As the child advances to successively higher grades in school, he ultimately faces the matter of fitting into the regular classroom. Initially, the visually impaired pupil may be accepted as a kind of novelty, or as someone who is to be pitied and led about by the hand. The child will require much support and encouragement from all persons to make the adjustment. Training in specific skills and techniques will prove particularly beneficial. Role playing sessions may help prepare the child to meet questions from new classmates. Characteristics of the school which may escape the limited vision of the child must be interpreted for the child to engage freely in discussions with classmates. Poor personal grooming and habits which are not recognized as socially undesirable by the child must be corrected.

Working with the Secondary School Aged Pupil. Counseling sessions with the adolescent are likely to be concerned with ways for identifying and strengthening those resources which the pupil already possesses, rather than endeavoring to change the environment or to build new basic skills. When the person has a clear understanding of his interests, his abilities, the things he wants in life, and his own willingness to try, then he is more likely to select those situations which will provide a maximum amount of satisfaction for him. At least, he can have a better idea of the type of situation he is looking for. Counseling with the adolescent often takes the form of an objective accounting of the personal assets and limitations of the individual. The counselor's knowledge of the demands which various life situations will make after the pupil leaves school can be very useful. Information about the job market and vocational preparation is essential.

The common difficulty faced by the visually impaired pupil is that of forging satisfying social relationships. This problem becomes acute and is the source of much frustration and disappointment for the teenager. It is during this period that the pupil (and the parent) must really come to grips with the reality of the visual defect. As maturity is approached, the idea of somehow "outgrowing" the problem becomes less tenable. Increasing size and age have as a corollary increasing expectation of self-sufficiency and competency. The visually impaired adolescent is less likely to be regarded as a child who must be looked after and helped to find his way around. Adolescents pride themselves on being independent and on not needing any kind of assistance. They are intolerant of any of their group who cannot function independently. In addition to these strong pressures, the visually impaired teenager is frequently limited in his mobility. No way has been devised for the blind to drive an auto, and getting around independently to the many teenage activities is always difficult. The visually impaired teenager is usually unable to reciprocate many of the social offers tendered him and is vulnerable to being regarded as a "drag." It is apparent that this is a particularly difficult time for the visually impaired. Resolution of the problems encountered at this stage requires extensive and extended effort, but once resolved, the individual generally proceeds to meet subsequent life adjustment demands with ease and success.

The Caseworker and the Classroom Teacher

Since education is the most important part of the total effort needed for habilitating the visually impaired child, the caseworker's contacts with classroom teachers assume a special importance. As the person who coordinates and delivers educational activities, the teacher becomes the most important treatment person for the child. All other services, and particularly those provided in the school, must support, enhance, and facilitate the child's capacity to benefit from the

opportunities which the teacher presents in the classroom. The functions of the social worker are closely coordinated with the objectives of the classroom teacher.

The teacher's use of casework services. Teachers of the visually impaired can make the most effective use of the caseworker's skills when the teacher understands how these skills can be of assistance. The extent to which the caseworker can be of help to the teacher is dependent on a thorough knowledge of the methods and objectives of the teacher. The teacher requires details about the child's social skills, parents, and home. The caseworker must know just where the child is presently located on the educational achievement ladder, how the child adjusts to the group situation of the classroom, and what are the significant gaps in the child's experiences. All this information requires continual contacts and discussions between the teacher and the caseworker. Differences in approaches must be resolved so as to meet the parents and the child with uniform explanations and expectations. The teacher and the caseworker must arrange for periodic conferences to review progress, to insure they are working consistently, and to guard against being manipulated into giving support to a child or parent who attempts to play the teacher and caseworker against each other as a way of avoiding expectations.

When working with special teachers, the caseworker is likely to provide family and home background information about a child. Such knowledge is helpful to the teacher in understanding how the child acts in the classroom and what educational activities can be expected to be most useful to the child. The caseworker may organize and meet with parents in group counseling sessions. Individual contacts with parents are generally scheduled to supplement the group sessions. Some teachers may show an interest in working with parents. The caseworker should encourage such contacts and assist the teacher to acquire skills and techniques which will permit the teacher to work effectively with parents.

Working with teachers of regular classes makes different demands of the caseworker. The visually impaired child is said to be educationally "integrated," when most or all of the time is spent in a regular classroom with seeing pupils. Occasional assistance is received from a resource teacher who is trained in the special educational problems of the visually impaired. The caseworker may assume an active responsibility for informing the regular teacher about the visually impaired child's limitations and what kinds of expectations can legitimately be established. The regular class teacher may need to be cautioned to use communication forms which are comprehensible to the visually impaired child. A blind pupil will miss the significance of winks or gestures unless these are explained verbally. Learning from demonstrations may be difficult unless the pupil is provided with supplementary descriptions.

The caseworker must be alert to the possibility of teacher pre-

conceptions about visual impairments which can have unfortunate implications for the pupil. Teachers have the same kinds and degrees of reactions toward a visually impaired pupil as are observed between parent and child. Thus, the teacher may be rejecting, overprotecting, fearful, or pushing for excessively high achievement in dealing with the pupil. When such reactions are identified, the caseworker should seek to work with the teacher and to establish a more realistic attitude.

Indications for making a request for casework services. The teacher is generally free to request assistance from the social worker whenever the teacher believes the caseworker can be of assistance in working out a problem or can be of help to a pupil who is having difficulties. Since development is characterized by the appearance of problems which are resolved only to give rise to new problems, the teacher may be uncertain as to when assistance from the caseworker is needed. With experience in working with children, the teacher becomes more assured about which children are going to need additional help in order to resolve their problems successfully. The following guidelines are offered as a kind of behavioral checklist which may be considered before requesting the services of a caseworker.

1. A prevailing marked degree of apprehension.
2. An unaccountable reversal of former positive feelings toward adults, school, classmates, or other significant persons or places.
3. A persistent overlay of extreme hostility.
4. Sudden return to regressive behaviors and infantile habits.
5. Insatiable demand for attention and approval.
6. Anxious concerns about anticipated failures.
7. Frequent absences without discernible cause.
8. Chronic underachievement.
9. A marked need to dominate others.

On noting these symptoms, which sometimes occur in combination, the teacher should make a request for assistance from the caseworker. Upon receiving the request for assistance, the caseworker contacts the teacher and fixes a time for a conference in which the situation can be discussed and corrective steps initiated.

Communication and Coordination Functions of the Caseworker

The caseworker evolved as a highly trained coordinator and communication specialist concerned with identifying factors in the home which contributed to adjustment problems. The collection of information about a child from various service agencies (hospitals, clinics, day care centers, governmentally-operated service units) and the organization of the material into a complete case history is still one of the major services performed by the caseworker. Agencies seldom

communicate among themselves, and, without the integration efforts of the social worker, it would not be easy for persons working with the child to know what assistance has been attempted. Presenting the special teacher with a complete case study including medical diagnosis, treatment prognosis, an analysis of the home, and an evaluation of the capacity of the parents to be of assistance can greatly speed the teacher in making a suitable placement for the visually impaired child.

Once the child has been accepted in a school program, his continued enrollment in the program is usually dependent on the teacher (and school) being supplied with current information, even though it may replicate that required for admission. Many visual disorders are progressive. There are frequent changes in homes and families. The teacher is better able to make appropriate adjustments in the educational program when these changes are known. In other instances, the resolution of problems noted by the teacher in the classroom may require the teacher having knowledge of changes in the home or of the availability of particular services (as counseling) in the community.

A continual chain of communication must be maintained between the teacher and the pupil's parents. The partnership shared by the teacher and the caseworker is dependent on this service. The teacher's time is frequently taken entirely with having to be in the classroom, and the teacher has had limited training in evaluating the adequacy of a home or community. The social worker must move in and carry out functions which are essential for the education of the pupil and yet for which the teacher has no time. Supplying essential information and seeing that parents or some responsible person take the visually impaired child for routine follow-up medical and other examinations may become an even more important service carried out for the teacher when the pupil is integrated in a regular classroom. Regular classroom teachers are likely to have even less time which is not taken up with classroom duties. In addition, the teacher of a regular class can be expected to be less knowledgeable of the special needs of the visually impaired pupil.

Parent groups and other community services. Mention has previously been made of the social worker's functions in working with groups of parents. Whether designated as parent education groups, as group counseling sessions, or by yet another title, some kind of parental group activity on a regular basis has proven to be of major benefit in promoting a favorable school adjustment for a visually impaired child. In some instances, the teacher chooses to work with the parent group. In other cases, the teacher prefers to leave this responsibility to the social worker. Frequently, the teacher and social worker act as co-leaders in conducting the parent groups. Whatever approach is taken by the local school program, it is obvious that requests for group work skills are among the major demands made of the case-

worker. This service is more likely to be carried out in cooperation with the special teacher.

Visual impairments seem especially prone to evoke strong emotional feelings. When superimposed on normal parental feelings for a child, the added press of concerns about the future for a visually impaired child increases the possibility of severe emotional adjustment difficulties. Severe emotional reactions of parents or pupils may best be treated by an external school facility such as a mental health clinic, child guidance clinic, or private practitioner. This can preserve a working relationship between parents, pupil, and teacher and allow the school staff to continue its primary concern for managing the education of the child. The social worker must be knowledgeable of such treatment resources in the community. The social worker should build a close professional contact with such persons and agency staff members so that there can be an exchange of developments at school and in the treatment agency. Such an exchange is ineffective if only the school supplies information. There is value to the child only when the exchange is reciprocal.

As the child enters the pre-teen and adolescent ages, socialization and recreational outlets become a pressing problem. If satisfactorily resolved, the pupil's school adjustment may be enhanced. The school thus has a concern for seeing that these interests are provided for. Responsibility for assisting the visually impaired child to find suitable socialization and recreational outlets is usually assigned to the social worker. In achieving socialization and recreational outlets for the visually impaired adolescent, the social worker may collaborate with parents, the adolescent, or age-mates. Advice, encouragement, and "helpful hints" can be given in counseling sessions, but the training of real skills may best be carried out by recreational workers or friends of the adolescent (dancing, playing checkers, poker). Frequently, the social worker's job may entail interpreting the visually impaired adolescent's limitations and possibilities for responding. Demonstrations rather than explanations are more likely to illustrate the desired technique and result in success.

Other Coordinating Functions of the Caseworker

Arranging for the visually impaired pupil to obtain other services than those usually available in the school involves the caseworker in another group of coordinating functions. Although less frequently required, these services are essentail to the eventual successful habilitation of the pupil. In most instances, these are services which have a direct influence on how the pupil gets along in school. These coordinating functions are sometimes carried out by caseworkers other than those in the school staff, in which case responsibility for their implementation is jointly shared by the school and outside agency caseworker.

Placement. The relatively small number of children who have

educationally significant visual losses creates problems in sparsely populated areas. The trend is to establish centers for the education of these children on the justification that such centers can be more completely staffed and equipped. An unfortunate consequence is that the centers are often located at some distance from the pupil's home. In order to take advantage of the educational program, the family must either move nearer to the special school, or when this is not possible, the child must be provided with living accommodations which are in closer proximity to the school. Moving the child closer to the classroom is often the only solution. The child may be placed with a foster family, or he may be quartered in a residential school. Children who have other handicapping conditions in addition to the visual impairment (motor disabilities, hearing losses) are especially likely to be placed in a residential school where they can have the advantages of a highly specialized staff and particular equipment.

Less frequently, the child may be permanently removed from a home and family situation which is deemed unsuitable for a favorable developmental outcome for the child. This situation may be occasioned by the death of parents, absence of parents, limited resources of the parents or home, or unreconcilable conflict between parent and child. Removal from the home under such conditions usually entails legal proceedings. Whether of temporary or permanent nature, arrangements for placement and relocation of the child are primarily the responsibility of the social worker. The social worker must conduct the study of the adequacy of the present home placement and establish the capability of the new placement for actually providing essentials not now available for the child. There is no justification for making a change unless the new placement situation has reasonable possibilities for enabling the child to attain a more favorable adjustment.

Vocational services. Some schools have counselors trained in vocational placement who can supply the visually impaired pupil with vocational information and assistance. The social worker may contribute to an effective vocational choice by sharing with the vocational counselor an interpretation of the pupil's assets and limitations. Many vocational counselors have limited experience in work with the visually impaired. Some vocational counselors, however, have made a special effort to understand the visually impaired and can make highly effective job selections. Where vocational counseling is not offered by the school, the caseworker will have to assume these functions. The caseworker may locate a suitable employment position for the visually impaired person, or see that the visually impaired person is put in contact with a responsible specialized agency (Division of Vocational Rehabilitation).

Inter-agency coordination. It is by now apparent that the habilitation of the visually impaired person generally involves services delivered by several agencies. The benefit of these services is greatest when

they are carefully coordinated, but coordination is seldom a part of the services offered by any one facility. The caseworker assumes this responsibility for synchronizing the several services a child may require. A visually impaired child may have to be hospitalized for an extended period of time to carry out a series of surgical operations. The school needs to know if a teacher on the hospital staff will be working with the child and continuing the classroom work, or whether the school will be able to send an itinerant teacher to instruct the child, or whether the parents must arrange for a tutor to work individually with the child. The specific agreement as to what one agency will continue to supply and what the new agency is expected to provide for the child is a crucial arrangement which must be completed in detail by the caseworker.

Summary

The caseworker establishes a close working partnership with the classroom teacher in building an effective educational program for the visually impaired pupil. Contributions made by the caseworker include information about the home and family, counseling with the pupil and parents, coordination of services supplied by the several agencies or professionals who may be serving the pupil, and the securing of non-school offered services which are required by the pupil. It is essential for the caseworker to acquire a minimal technical knowledge of medical, corrective lens fitting, and vocational problems which apply to the visually impaired. Contacts in the school will enable the caseworker to gain an understanding of educational techniques and objectives. When working with young children, the caseworker may be engaged in contacts with parents with the goal of strengthening parental capacity for assisting the child. As the pupil becomes older, the caseworker may spend increasing amounts of time in direct contact with the pupil. During these sessions, socialization and vocational adjustment problems are frequently the focus for discussion.

CHAPTER IV.

PSYCHOLOGICAL EVALUATION OF THE VISUALLY IMPAIRED PUPIL

The psychologist is concerned with ascertaining the potential of an individual for interacting with his surroundings and for assisting in the building of capacity for meeting the demands of our society. In accomplishing these objectives, the psychologist applies professional skills for the measurement of various abilities, personality factors, and socialization skills. The individual's current stage of functional effectiveness is compared with indices which mark the developmental progression usual for his age. Suggestions for promoting a continuation of normal growth of the individual's adjustment potential are presented in the framework of knowledge about how learning occurs. Where the processes of growth and development are found to be blocked, the psychologist makes corrective recommendations.

When working in the schools, the psychologist functions as a member of a team made up of the teacher, social worker, nurse and other school professional staff. Psycho-educational team members work in close cooperation to provide the most useful school experiences for the pupils they serve. The visually impaired child requires special modifications and assistance to benefit maximally from the educational program. The psychologist is advised to become familiar with the role of the various professionals, especially physicians and optometrists, who give service to the visually impaired. In addition, there are particular skills required of the psychologist who works with visually impaired pupils. The psychologist must acquire an orientation of these special skills in order to be effective as a member of the psycho-educational team serving the visually impaired.

Learning and Development of the Visually Impaired Child

Psychological Characteristics Influencing Learning. Development normally proceeds in a pattern in which the various systems function in unison with each system contributing its best possible effort. The visually impaired child ordinarily receives less than the usual amount of information about his surroundings. The loss of input information is proportionate to the degree of visual impairment. Although the several specialized organ systems which make up the individual's potential for dealing with his surroundings tend to be correlated and act in a uniform fashion, all individuals have possibilities for compensating for deficits in any of these specialized systems.

For the child with a visual loss, development must progress on the basis of ability to make up for the loss by compensatorily drawing upon those systems and abilities which are intact. Fortunately, there are various channels for receiving information about our sur-

roundings. The individual's success in making an adjustment with his surroundings by the compensatory use of these other channels necessitates special training and requires a selective emphasis on those experiences which will be conducive to optimal development.

The child who has a visual loss will be deprived of some of the visual stimulation experienced by the seeing child. The amount of visual loss must be identified as early as possible and efforts instituted which will systematically make up for experiences lost because of the visual limitation. The loss of visual stimulation is total for the blind child and is reduced when the child has partial vision. As a result of missing these experiences, the rate of development is slower for the visually impaired child. The gap is evident in a delayed rate of attaining most developmental tasks, including mobility, language, self-care, and socialization. The differential is reduced as essential stimulation is provided the child through intact sensory channels and is less evident in the older than in the younger aged visually impaired child. This temporary delay in getting started should not be confused with the generalized and persistent retardation observed in the mentally retarded.

Guidelines for Learning Activities. The visually impaired child finds out about his surroundings in the same way as does the seeing child, through information received by sensory systems. The difference is that the visually impaired child must rely on auditory, kinesthetic, gustatory, olfactory and tactile stimulation to a greater degree than does the child with normal vision. The learning processes are the same. The outline which follows provides a frame of reference for organizing the basic steps of developmental learning. The steps are often sequential, but frequently they are interrelated and cannot be readily separated.

Experiences, which are the source of all learning, can be analyzed and translated into steps that will facilitate learning. When arranging experiences so as to control the learning outcome, it is advisable to recognize the unique features of each learning situation. This means that a given individual may spend a proportionately greater or lesser amount of time with some of the steps. Repetitions of the same activity can be a source of new learnings as the child deals with different aspects of the experience. As development progresses, persons will be found to have preferred modes for learning. Yet persons with otherwise well established learning habits may revert to a basic general learning pattern when new situations or new materials are experienced. Child development specialists believe that the child first interacts with the gross aspects of his surroundings. As learning progresses, there is a move to details. Differences are noted before similarities, but both types of recognition are necessary for seeing relationships and for organizing objects and events into categories. Concept formation is the final symbolic expression resulting from the processes of identifying, comparing, and classifying experiences.

Parental attitudes and expectations about the child's competency exert a greater influence on the child's learning than does the degree of visual loss. A visual impairment definitely limits the child's ability for interacting with his surroundings, but encouragement and controlled challenge can prevent the child from feeling inadequate and powerless. Visually impaired children must learn to make greater use of taste, hearing, touch, smell, and kinesthetic cues as the basis for finding out about their surroundings. Their sense of security in knowing what to expect depends on ample opportunities for learning about the world in these terms.

The visually impaired child must frequently be guided so as to experience a particular feature of his surroundings which may be obvious to the seeing child. Play is a natural and valuable activity in which children do much of their learning. The child is first concerned with things or persons closest to him, his toes and fingers, or his parents. As he becomes older, the child's interests expand to encompass all the world about him. This curiosity-driven reaching out must be selectively encouraged in the visually impaired child.

The parent should see that the child is not overwhelmed by having to deal with too many objects, requests, or events at any one time. The visually impaired child is more likely to require repetitions for learning. The parent must understand the child's individual pace and stage of learning so as to avoid pressuring the child or nullifying a learning opportunity by supplying too much help to the child. Language is ordinarily acquired in conjunction with the child's experiences as what he is doing is explained and labeled. For the visually impaired child, language acquisition assumes a greater than usual importance. Words chosen by parents for defining and labeling experiences must be basic and unambiguous.

A simple pattern of initial demonstration with explanation of a new action, followed by the child attempting the action while repeating the verbal explanation using his own vocabulary terms, seems to provide the most effective learning experience. The visually impaired child may profit by holding his hands on those of the adult or by having the adult guide the child's hands to perform some function, such as learning how to open a door. Verbal description is still essential for facilitating the learning. Parents should be aware of the normal variations which are observed in the learning pattern of a child. A child may show no interest in a new radio on first contact. Later, he may spend hours absorbed in finding out all about the same radio. Failure to learn, or even to be interested in some object or behavior on first experience, does not mean that the child will never be interested or want to learn.

The most important kind of learning may be that of learning how to learn. Being curious and wanting to find out about things is an attitude which can be fostered by the use of reward and encouragement. The visually impaired child must be taught the importance

of getting directions and attacking a problem independently. He must also learn when and how to ask for the help needed to carry a task to a successful conclusion. The child who fails to learn from his experiences will realize less of his potential for being a person and will be plagued with feelings of dependency and personal inadequacy. Other persons observing his ineffectual efforts to function may ascribe the failures to his visual impairment when in reality the failure will be attributable more to limited experiences and minimal interactive involvement with his surroundings.

Psychological Evaluation of the Visually Impaired Child

The most widely acknowledged contribution made by the psychologist is that of his skill in assessment of abilities and personality characteristics. The extent to which the child attains the objectives of a training program, and thus presumably profits from the training program, is a question which can be answered from measures obtained by the psychologist. The psychologist uses several methods for collecting information (observation, sampling, inventorying, measurement) when he is getting a picture of the child's potential for learning. Knowing what the child is really able and willing to do is essential for instituting any procedure which is intended to influence the child.

Preparation for the Psychological Evaluation

Purpose of Evaluation. When a child is referred to the psychologist for study, the job of evaluation is made much less difficult if the questions that have been raised about the child are clearly stated. This does not insist that the reasons for referral be reduced to minute questions (As for example: To find out the number of letters he can copy in 20 minutes; or to find out how many friends he will make in 5 days.) The reason for referral is often a general consideration. (Examples: To find out if he has the capacity to learn from the education program in the primary resource room for visually impaired; or, to find out if he is socially mature enough to adjust in second grade.) The point is that a child is usually referred to the psychologist for a reason, to get an answer to a question. When the question is indicated, the psychologist can organize his contacts with the child so as to collect information relevant to the question. Otherwise, the psychologist may have to spend days seeing the child, an unwarranted imposition on the child's and the psychologist's time.

Typically, the reason for referral will be that of obtaining a general picture of the child's psychological organization. There may be associated specific questions, such as eligibility for placement in a special education class. Assessment must be made of the child's general learning ability (intelligence), his social development, and his equipment for controlling his emotions. The psychologist must identify the child's willingness for working to achieve a goal and find out

what the child expects to receive for his efforts. Reactions to success and to failure vary from one person to another. Observation of the child's potential for achieving must be compared with measures of actual achievement. Even though difficult to quantify, the child's values, beliefs, and attitudes serve to connect him to other people and to organize his own abilities and skills for doing a job. The psychologist's prediction as to how well the child is going to be able to do a job will be more dependable and useful when the job situation has been accurately described.

Review of Background Information. Upon receiving a request to carry out an evaluation of a child, the psychologist begins to form questions about the child. Many of these questions will be answered in the psychologist's contact with the child, but some of them must be answered by other persons. Partial answers to questions about the child's ability to do a job are found in information which is outside of the psychologist's primary area of professional skill and training. A summary of this relevant information is generally included with the referral request as "background information." Background information materials present a kind of summary of the important happenings in a child's life up to the present. The content will vary according to the age and life experiences of the child, but coverage includes these areas:

1. Circumstances of the pregnancy, birth, and early adjustment.
2. Pattern of accomplishing usual developmental tasks.
3. Experiences in socialization.
4. General physical health.
5. Summary of diagnosis, treatment, and prognosis of visual defect.
6. Nature of home and adequacy of parents.
7. Record of school attendance, including achievement scores.
8. Services received or being received from other agencies.
9. Findings or treatment from other professional specialists.
10. Rate of language acquisition.

Occasionally, information about important background areas is not represented. In such instances, the psychologist may be able to obtain a reasonable account of portions of the missing data (for example, medical diagnosis and prognosis). When background material is missing, the psychologist must decide whether it is advisable to go ahead with his study of the child, or whether the psychological evaluation will have to be deferred until the missing information is obtained. Information as to the child's degree of vision is essential in planning for the visually impaired child.

Selection of Appropriate Measuring Instruments. Although lay persons have a dread of the consequences of visual impairment, the actual limitations do not appear so severe. For many visually im-

paired, it is possible to use regular psychological measuring scales after making only slight modifications. Psychological measures are designed to assess problem solving abilities rather than visual acuity. The materials used are large and can often be easily manipulated even by the legally blind child. A good psychological measuring scale is made up of many items, not all of which require visual clues for solution. The assessment techniques used by psychologists have frequently been criticized as having too many verbal items, tasks which are given to the subject and solved with words. The language facility of the visually impaired, although initially delayed, soon catches up and becomes one of their stronger abilities. Items from most personality inventories can be read to the subject who then gives a verbal response. Psychologists who work with young children frequently find observation and interviewing are superior to other techniques for assessing personality and social traits of children.

Working with any exceptionality always has the associated issue of whether to use measuring scales designed exclusively for individuals who have a particular impairment or whether to take the approach of adapting a device to accommodate the disability. There is no absolute answer for the problem, but each psychologist must resolve the issue to his own satisfaction. Special measuring scales have been developed for persons who have a visual loss, and the psychologist who works with the visually impaired should give these special techniques an honest tryout. He may find that they do not add significantly to information he can get by adapting the commonly used techniques. It can be difficult to explain special scales to persons not familiar with them (teachers, social workers, guidance counselors, physicians). Use of a special scale can perpetuate the belief that the visually impaired are not quite a part of normal life events, an unfortunate consequence which contradicts the goal of self-reliant membership in society.

It is probably more important to select measuring scales which are appropriate for the age level of the child and which have established validity criteria that are revelant to the predictions that are to be made from the obtained scores. Experience with the visually impaired will assist the psychologist in ascertaining the degree of educationally useful vision possessed by the child. Categories of visual impairment are generally based on measured visual acuity, but visual effectiveness is not dependably related to visual acuity. Jaeger indices, usually given in the ophthalmologist's report, may be useful for conveying the visual demands appropriate for the child. It is advisable to try to administer a selected scale but to be prepared to change to another device if the child cannot cope with the visual requirements.

Approaching the Visually Impaired Child

Establishing rapport with a child is essential for conducting an

adequate psychological evaluation. This entails building a degree of communication-contact such as ensures that the child understands what he is expected to do and that the child is given a medium which allows him to respond in a way appropriate for him. The psychologist is charged with responsibility for creating this bridge to the child. Visual clues, which ordinarily have a major role in establishing contact, are not available to the usual degree in the case of the visually impaired. This means that greater reliance must be made on tactile, kinesthetic and auditory modes for establishing contact with the visually impaired, especially the blind. The visually impaired are accustomed to these types of contact and expect it. The use of the word "see" is germaine to this point. Persons unfamiliar with the visually impaired, and especially the blind, are sometimes taken aback when they observe a worker saying, "Would you like to see the ball," to a blind child. This has meaning to the blind child, and he expects the object to be placed in his hands, or his hands to be placed on the new object, so that he can feel and touch, thus "seeing" the object in his own way.

Making Contact With Young Visually Impaired Children. Young children typically have limited experiences with meeting new persons and are uncertain as to what is expected of them. This situation is compounded in the case of the visually impaired child who can only deal with parts of his surroundings. The visually impaired child is especially vulnerable to being overwhelmed by too much stimulation when having to deal with the impact of newness from the psychologist's office, surrounding school building, office staff persons, professional workers, and strange requests made of him. The visually impaired child of pre-school age may be more than ordinarily dependent upon the support inherent in having a parent close at hand. Hearing the parent's voice can be reassuring.

Contact should be quickly established so as to allow a maximum amount of time with the child. The child should be given a simple but interesting task to do. Leaving a child sitting alone in a waiting room can raise an already high level of concern to an uncontrollable point. It is preferable to touch the child and to encourage him to touch back as a way of getting acquainted. These tactile contacts can be transferred to verbal interchanges or sounds made by testing materials, with occasional reinforcement by touching. Avoid overtiring the child. Frequent changes in tasks and materials are likely to keep the child's interest. The examiner should expect and be prepared to do more than the usual amount of explaining and permitting the child to explore. The child needs time to find out by his own methods if the door on the examiner's office is the same as the doors in the child's house, if the phones are alike, and so on. The child should be encouraged to extend himself, and this type of activity can provide valuable supplemental information about the child's capacity for learning.

Working with the Older Visually Impaired Child. Physical clues are also important in making contact with the older visually impaired child, but they should approximate normally used social gestures such as shaking hands. The older visually impaired child has had more experience in meeting new persons and new places and is less distracted by the novelties of the examing situation. He will require assistance in locating himself properly, and the examiner must assume responsibility for the child finding the right chair, the limits of the table top, and such essential physical bounds.

In other respects, rapport is established in much the same way as with the seeing child. That is, the child is given an explanation of why he is being seen by the psychologist. The "rules of the game" are spelled out as to time limits, guessing, and appropriateness of questions. The examiner should avoid creating excessive failure experiences and obtain only such information as is necessary to answer the referral request.

Psychological Evaluation Techniques

Carrying out a psychological evaluation is often said to be more a work of art than a precise scientific endeavor. This may only be a recognition of the fact that there are various tools which can be used to collect information about the person studied. There are also various personalities making use of the tools. Some psychologists are able to use one tool more effectively than another tool. All psychologists use some of the same techniques, and all obtain about the same kinds of information.

Measuring Scales. Standardized measuring scales, popularly called "tests," are widely associated with the image of the psychologist. These measuring scales are of valuable assistance to the psychologist and enable him to make quantifications of abilities. These scores can be compared to those obtained from other individuals and serve as a point for making estimates about what kinds of performance can be expected of the individual. Most tests measure an ability (as problem solving), or a skill (as finger dexterity), but some assess personality variables (as interests, attitudes, or values). Tests are really samples of specific behavior obtained in controlled conditions. Even when carefully collected, other information is required before the scores can be used to predict what a person will do in similar situations.

Scales which measure "intelligence" (school learning ability) are the most widely used standardized tests, and at least one such measure is administered as a part of the psychological evaluation of the child. Special intelligence tests have been developed for the visually impaired. The first such adaption was the Hayes-Binet Intelligence Scale for the Blind, which is an all verbal modification of the time-proven Binet scale editions. A different approach was followed by

Dr. T. E. Newland in standardizing the Blind Learning Aptitude Test (BLAT). Items on the BLAT are similar to those found on scales such as the Penrose Matrices Test, but the items are presented in tactile units with raised figures. The items are solved by the child using his fingers to touch the materials. Directions for the BLAT are given verbally, but use of vision is completely eliminated.

Our experience suggests that a special test is seldom necessary for assessing the learning ability of the visually impaired. This is particularly true when adequate supplementary data are collected. Observing how a child does on the Revised Stanford-Binet Intelligence Scale may in fact provide much more information which can be applied to planning an educational program than is provided by scores from a scale made just for the visually impaired. The child's ability to deal with a variety of materials and tasks is sampled. On the other hand, there is much value for the psychologist to use special scales from time to time as a way of developing his skills for adapting the customary techniques. One type of special standardized measuring scale that can be most helpful is a device which simply establishes the sizes of print and fineness of visual discriminations which the child can make. Such a scale is being developed by Dr. N. C. Barraga (Visual Efficiency Scale).

Interview Techniques. Personality assessment presents a particular problem when working with children. Such assessment is especially problematical when dealing with the visually impaired. Projective tests are generally used to assess personality. The Rorschach Psychodiagnostic Test and the Thematic Apperception Test (and its variations) are widely encountered. These personality measures require the subject to make responses to visual stimulii, an improbable demand for many visually impaired persons.

An effective approach for assessing the personality of children, and one that is applicable to the visually impaired, is that of asking questions in an interview with the child. The interview arrangement is structured but can be carried out very informally, even on the level of a game. The Guess Why technique developed at the Boston Nursery School for Visually Impaired has a number of open-ended situations which are read to the child. The child's responses in closing the situations reveal his own personality make-up. Questions about what a child likes, who he plays with, what kinds of things make him angry, and who he is most like provide a complete account of the social and emotional aspects of the child's personality. Couched in the structure of a developmental history, this type of interview technique should be perfected by all psychologists.

The only limiting factor in using the interview technique is the child's facility and acquistion of language. Children of less than five years of age seldom have a level of language which enables them to participate in the interview exchange. They seldom have much well-defined personality organization, either, and it is necessary to carry

out an interview with the parents and to make observations which will supply data about the personality traits of the child.

Observation Techniques. A reliable source of data, and perhaps the most valid of all methods, is the observation of the child. The skilled examiner should master the mechanics of administering a scale and thus free himself to concentrate on the unique character of the responses which the child makes in coping with tasks presented to him. The child's willingness to try, reactions to success and failure, capacity to recover, the length of time he will work at a task and ability to evaluate the appropriateness of his efforts are the sources of information which are necessary to say what the child can be expected to do in another situation.

Knowledge about the child's social and emotional development is revealed in watching the child at play, at work, resting, or listening. Observations should be made in a variety of situations including the classroom, playground, going to and from school. In the classroom, a number of different situations are to be found. It is important to study the child reacting in a larger class group, participating in smaller groups of three or four pupils, working alone, working in quiet activities, and working at noisey tasks. Information gained from observations can strengthen other measures and form a complete picture of the child.

Important Areas for Evaluation

The psychologist in the schools is most concerned with the pupil's suitability for school adjustment. Ascertaining the pupil's capacity to learn at school requires that the psychologist be familiar with the educational materials and methods, the organization of the classroom, and the sequential relationships in the learning presented at the successive grade levels. He must know exactly what is required to read braille and how it differs from sight reading, at what point art is introduced, and where the pupil is expected to be an "independent reader." Spending time in the classroom observing and talking with teachers is the only way to get this knowledge of the educational program. Important aspects of capacity for school learning are briefly discussed on the following pages, not in the order of importance, but more for their revelance to the school learning problems of the visually impaired pupil.

Cognitive-conceptual Ability. Capacity to translate concrete experiences into symbolic representations is a basic ability which may be the single most revelant factor influencing all learning. It has particular importance for school learning. Manifestations of cognitive ability are evident in identifying differences and likenesses, forming associations, organizing groups, and making generalizations. Ordinarily thought of as "mental," a complete range of cognitive ability is found among the visually impaired since cognitive ability is not associated with visual defect. Some visually impaired are mentally

retarded, some are intellectual geniuses. Most are in the average range, a distribution which replicates that observed in the seeing population. MA is the best single index of the cognitive ability important for school learning, especially for pupils in the elementary grades.

Language Processes. Ability to acquire and use language is a vast asset in our society and is a talent especially demanded for successful school adjustment. Language assumes a critical importance for the visually impaired who must rely on this medium for dealing with the world to a greater extent that does the seeing person. Language processes of the visually impaired must be assessed in detail, including vocabulary, general comprehensibility, language expressive facility, and grammar-syntax adequacy. Auditory abilities which are basic to language acquisition must also be surveyed. It is helpful to have an audiological screening evaluation, but the psychologist may observe the extent to which the child has other than acuity skills. Auditory memory and auditory sequencing are important auditory skills which can be trained in the classroom. Ability to locate the sources of sounds is essential to the visually impaired child in finding his way from one place to another.

Visual Skills. Repeated reference has been made to the fact that educationally usable vision is possessed by many pupils who are classed as educationally visually impaired. This adds to the possibilities for presenting learning opportunities to the child in many situations. The psychological evaluation offers many opportunities to observe what sizes of objects, what materials, and in what conditions the pupil can use his remaining visual ability. A readiness type test is being developed by Dr. N. C. Barraga to ascertain the minimum print size which the pupil can identify (Visual Efficiency Test).

Kinesthetic and Tactile Skills. Some features of our surroundings cannot be heard. Fortunately, many of these objects can be known on the basis of a sensory modality which is extensively used by the visually impaired, that of touch or pressure contact. Knowing an object by its feel is so important for the severely visually impaired that it is equated to what the normal person does in "seeing," even to the point that the blind read by a touch method called "braille" reading. Information about the visually impaired child's kinesthetic and tactile sensitivity can be gained by observing the child working form board puzzles and by asking him to identify objects by touching and feeling them. As this skill becomes more highly developed, it can be used to make many discriminative responses such a grouping cut-out figures (as, all the circles, all the rectangles, etc.) The child may also be asked to sort materials of varying texture.

Mobility, or ability to get from place to place, probably depends to a large extent on tactile and kinesthetic cues, but auditory information also contributes substantially to the child's ability to orient

himself in spatial relationship with his surroundings. Motor coordination itself seems to be independent of these skills, even though the sense receptors are closely associated with the muscles. Some visually impaired children have excellent motor coordination, others are very awkward and clumsy.

Personality and Social Skills. Of all abilities possessed by the visually impaired, personality and social traits are the most influential in determining ultimate adjustment outcomes. They are also the most difficult to assess. There are no personality or social traits which have been found to be exclusively associated with visual impairment. The visually impaired are, however, more likely to experience failure, at least in initial efforts to cope with a task. For this reason, they may be somewhat lower in self-confidence. The visually impaired are restricted as to the kinds of social activities in which they may participate, but can usually carry out some worthwhile assignment in relation to the activity. Although unable to play ball, they can record the scores.

Personality and social skills of the visually impaired are best assessed in the way that seems most effective for other children, by interviews and observation. The visually impaired are inclined to present themselves in a less favorable light and to underestimate themselves. Restrictions most noticeable in their socialization experiences may account for a tendency to be slightly less mature than other children of the same age, but this difference diminishes with age.

Re-evaluation and Follow-up Examinations

Children have limited practice in doing all the things asked of them in a psychological evaluation. They are not accustomed to the examiner, to be alone from parents, and to being expected to work intently. These variables influence results obtained in the assessment of children and make it necessary to clarify or substantiate findings gained in a single examination session. A simple way for verifying impressions gained in one examination session is to conduct a second session in which the previous information can be checked. For some cases, impressions and scores obtained in the two sessions may differ widely. A third follow-up session may be necessary to resolve discrepancies. The psychologist should state when follow-up examinations are indicated, suggesting dates for these later examinations and indicating what will be the assessment focus. Sometimes the psychologist may have an inkling as to why the child reacted as he did in the examination. The psychologist may outline certain experiences or training for the child prior to another examination.

In many programs, there is a provision for regularly scheduled re-evaluations. Re-evaluations have the purpose of checking on the child's suitability for continuation in a program and for identifying

all educationally relevant changes which have occurred since the last examination. Such routine re-evaluations sometimes reveal dramatic changes in the child's capacity for school adjustment. The psychologist should not be alarmed upon discovering such differences but should regard them as questions which must be answered. Resolving contradictory findings obtained about a child can contribute information which dictates a more helpful and appropriate educational program for the child. As preparation for the re-evaluation, the psychologist should carefully review findings gained in the last psychological evaluation. All background information, especially medical findings and the home study findings, should be made current. It is most helpful to have a report of the teacher's opinions and impressions of how the child is getting along in the classroom. Where re-evaluations are not specified as a condition for continued placement in a program, the psychologist must assume responsibility for seeing this service is provided to the child.

Implementation of Psychological Findings

No matter how well the psychologist has established rapport with the child, and regardless of how accurately he has obtained measures of the child's potential for learning, the information is of no value unless translated into a set of educational experiences which are meaningful for the child.

Interpretation of Data. When the psychologist has collected all the measures and information about the child being studied, his job is only partly finished. Issuing a list of scores and measures does not convey an educationally useable picture, however accurate the scores may be. Personality is an organization and the potential for performing which is inherent in personality can only be represented by a comparable degree of organization of the measures (characteristics) of the child. Putting the scores and measures together in a form which makes the learning adjustment capability of the child comprehensible to the teacher, parents, social worker, and other persons dealing with the child is a task which demands the best of the psychologist.

A child's mental age is the most indicative of his current level for learning. Mental age rather than IQ is the score that should be given the teacher. A child with a high mental age will find the classroom a difficult place in which to learn if he has had only limited experiences in being a part of group social activities. Learning any task demands concentrated effort and control over one's emotional feelings. The child who is driven by excessive levels of emotional feelings can apply only a portion of his abilities to learning new things. A substantial part of his resources must be given to trying to control his emotions. Social and emotional characteristics are just as important for the planning of an educational program as are

measures of intellectual ability. The teacher can make use of favorable social or emotional development to enhance the pupil's learning in the classroom, making it easier and more enjoyable. Apprised of a pupil's poor social or emotional development, the teacher will recognize that correction of this deficit is essential for maximizing the pupil's ability to learn.

The teacher will frequently include the parents in the formal educational program of the child by giving parents assignments to be carried out in their home. Information the psychologist has about the personality make-up of the parents or the resources within the home should be included in the psychologist's interpretation of his findings. Parents may express things to the psychologist which they do not report to other persons, or which they believe will be included in the records and therefore does not need to be repeated to other persons. The teacher can approach parents with a confident and assured manner when she has been supplied all relevant information.

In interpreting data, the psychologist should make allowance for the delay in developmental achievement which the visually impaired often evidence. As a consequence, pre- and early school aged visually impaired children may score in the below normal ranges on some parts of a measuring scale. Low scores should be interpreted very cautiously and regarded as areas that warrant closer investigation and study. A child who is actually of less than average ability will manifest a consistent picture of sub-normal functioning over repeated evaluations. When the psychologist has doubts about the potential of a child, it is preferable to recommend the child's being placed in an active program which offers potentially beneficial experiences. Denial of participation in a stimulating program may have profound and irreversible consequences.

Formulating Recommendations. When organized into a usable package, data collected about a child suggest specific approaches and expectations. Immediate recommendations may include placement of the child in an education program. A day school, residential school, or other special school will be indicated as most appropriate for the child. The psychological study may lead to the child being handled as a multiple handicapped child, who will require multiple supporting services (physical therapy, auditory training, resource room for visually impaired) in his educational program.

The psychological study will identify special help which is required by an individual child. Speech correction services, vocabulary building, group social training, or help with personal habits for eating are common areas in which a visually impaired child may need help. Building up the child's willingness to try and encouraging his ability to work independently are traits which often require strengthening. Training to enable the child to be effective with braille or partially seeing materials and equipment must be initiated at an early point.

Recommendations will also deal with long term predictions and goals for the child. These may pertain to the child's possibilities for reading braille or large print, a fundamental educational concern. Long term considerations frequently touch on plans for anticipated special training or services such as an eye operation, surgical correction of a motor disability, or mobility training. These procedures may have to be deferred until the child has reached a certain maturational stage. Vocational training must be a part of the educational program. The child or parents may require counseling services, but may be unable to profit from such assistance until certain other changes have occurred.

The Staffing Conference. Suggestions for educational management are presented in a meeting attended by all persons working with the child. In the school, the teachers, social worker, guidance counselor, nurse, and psychologist are present. The meeting, which tends to be informal, is presided over by an educational administrator. Popularly referred to as a "staffing conference" or "case conference," the meeting begins with the teacher stating her concerns about the child and reviewing the child's present status in the classroom. Each staff member attending the conference then gives a report of their information and impressions about the child.

When all information about the child has been given, the members of the conference formulate suggestions for correcting any difficulties the child may be encountering, or for insuring that the child will continue to have an appropriate set of educational experiences. The suggestions are refined as to feasibility and suitability for the school's and the child's resources. Assignments for providing special services or for securing needed special assistance are made and agreed to by the responsible persons. The case conference closes with recommendations for follow-up of the plans outlined.

A case conference can be requested by any one working with the child. It has the advantage of an expert review of the child's total progress and the possibility of quickly supplying the child with the help needed to keep him moving in a successful direction. The informal nature of the proceedings allows for complete clarification of all information and impressions relevant to the child's educational program. Since the staffing conference is the decision-making aspect for the child's educational program, it is advisable for the psychologist to attend the conference with his data about the child well-organized but without rigid recommendations. Many of the recommendations are going to be carried out by persons other than the psychologist. They are more likely to be effective if the person who carries them out has an active and real share in their formulation.

SUMMARY

As members of the team of educational specialists who serve the visually impaired, psychologists supply technical skills in assessment, learning, personality development, and procedures for promoting normal adjustment (counseling). The psychologist's functions of measurement-evaluation are the most widely known. The psychologist's functions are shared in some degree with the teacher, social worker, and guidance counselor. The psychologist's role in these situations is that of a resource consultant. Assessment and measurement functions and interpretation of data obtained individually from persons referred for examination are the unique professional contributions of the psychologist. From the psychological evaluation, program placement, special corrective services, appropriateness of program components, and prognosis for future progress are evolved.

The psychologist should become familiar with special techniques and measuring scales for the visually impaired, but it is preferable to approach and deal with the visually impaired in ways suitable for the sighted insofar as is possible. The visually impaired often have more vision than is expected, and the highly verbal content of most measuring scales renders them well suited for the visually impaired. The characteristic of an initially slower rate of developmental attainment, observed in many visually impaired, may be a more relevant consideration than is visual acuity, especially when formulating educational programs.

CHAPTER V

EDUCATING THE VISUALLY IMPAIRED CHILD

Even though the number of persons who have an educationally significant visual impairment is rather small, less than one in 500, educating the visually impaired has been a major concern. The amount of interest in the problems of the visually impaired may have been favored by the relative ease in identifying this condition. Efforts to habilitate persons who have a visual disability have relied on educational processes more than on technological advances.

Formerly carried out exclusively in isolated colony schools by a single specialist teacher, programs serving the visually impaired have moved to locations where pupils have direct participation in the varied activities of living. The special teacher continues to be of central importance in the education of the visually impaired, but the educational program is strengthened by the supporting skills of physicians, social workers, nurses, psychologists, counselors, and other educators. This chapter will review present educational programs for the visually impaired. How the special teacher works in cooperation with other members of a professional team will be of particular importance.

Development of Educational Provisions for the Visually Impaired

Educational Programs. In contrast to other disabilities, there has been a greater willingness to allocate resources for the care of the visually impaired. Efforts for correcting a disability are initially directed to persons who have the most severe degree of that disability. Accordingly, the first habilitation programs for the visually impaired were related to the blind.

By about 1850, a number of special schools for the blind were established in the United States, their operation assured by support from the federal government. The success with which the blind were able to be placed as productive members of society made it easy to justify the support given these schools. Questions as to the educability of the blind were largely dispelled with the perfection of the Braille system for reading and writing. Methods for teaching Braille closely approximated the instructional sequences for teaching reading and writing to the seeing child. A justification was thereby provided for including the blind within the educational framework of the regular school program.

Success in the education of many of the blind resulted in visually impaired persons more frequently being referred for this specialized educational service. Some of these individuals who were classed as blind on the basis of medical and legal criteria were found to have useful degrees of vision. Education for such persons entailed train-

ing the individuals to use their small amount of vision with the highest efficiency. In the course of attempting to provide an appropriate educational program for the persons with the more difficult "borderline" types of visual impairment, practices which today seem ridiculous were sometimes pursued. For example, during one period there was a belief that myopia could be forestalled by keeping the child from having any situations in which materials were viewed at close ranges. It was not uncommon for children to be blindfolded as a way of forcing them to rely on taction and speed up their proficiency in reading braille.

Descriptions of visual impairment made from legal or economic considerations were not sufficient for indicating a correct educational placement. Individuals having the same measured degree of visual loss were not equally able to profit from the same instruction. Improvements in magnification devices were beneficial to some, but of no assistance to other children with visual impairments. Experience gained in these contacts very clearly indicated the complexities involved in presenting each visually disabled child an appropriate educational program. Technical equipment, instructional skills, medical information, resources of the home, and psychological findings could be adjusted by a special teacher to suit the unique educational requirements of each child. A successful outcome demanded the close cooperation of a group of professionals working with and in support of the teacher. The effectiveness of the team was greatly enhanced when each member fully understood the skills which other members contributed.

Teachers of the Visually Impaired. During the time that the visually impaired, most of whom were blind, were educated in residential schools, there was relatively little concern for the systematic training of teachers to work with these children. Located in isolated areas and supervised by other than regular school administrators, teachers staffing the residential schools were trained "on the job." They sometimes had training and experience as regular teachers. Residential schools generally had a physician on the staff who advised the teachers about the visual disabilities of the pupils. Psychologists and caseworkers were also part of the staff and worked in close cooperation with the teachers. Teachers of the blind were accustomed to having psychological, medical, and social work services and were skilled in transforming information given by these specialists into classroom activities which were compatible with the pupil's visual loss, learning ability, and social development.

Attempts to devise a set of educational experiences for the partially sighted child originated in the regular schools. These pupils did not require the braille method for reading and seemed able to learn with the aid of magnifying devices. The magnification sometimes took the form of enlarging the size of print and pictures. Another approach entailed training the pupil to use a visual aid, a

device which enlarged existing print and materials for study. Teachers of the partially sighted used the existing instructional materials and methods. The materials were made larger to adjust them for the limited vision of the pupils. Teachers who worked with the partially seeing tended to have preparation and experience in a regular teacher training program. As a consequence, they had backgrounds in child development and the sequence of instructional programs. They were less familiar with how to implement medical, psychological, and social work services into the educational program for a specific child.

The movement into the regular schools of all education for the visually impaired resulted in a combining of the skills and approaches of teachers of the blind with those of teachers of the partially sighted. Out of the exchanges between the two programs emerged one of the most effective educational programs for dealing with a disabled pupil. Special teachers of the visually impaired are now trained in regular teacher training programs which include a period of supervised experience in classes for the visually impaired. The trend is to prepare the special teacher to work with all types of visual impairment rather than the former approach of specializing for work only with the blind or the partially sighted.

Educational Classifications of Visual Impairment. The study of any disability soon reveals the existence of several definitions of the condition. This predicament can be most confusing unless the reasons underlying the several classifications are understood. A disability can be considered from different aspects. Economic, legal, social, personal, medical, and educational perspectives are a few of the possibilities. In a given situation, a particular dimension of the disability will have the most significance. In some other situation, that same characteristic may have relatively little importance. For example, a simple, easily arrived at, and readily repeatable measure of vision is necessary for legal purposes. But the same characteristic of measured visual acuity cannot be relied upon to indicate which educational curriculum will be correct for the pupil.

Traditional definitions of visual disability have been based on measured acuity (sharpness of vision) or on size of the visual field (the area which can be viewed). Such classifications of visual loss are not useful in the classroom. Educational activities for the child with limited vision must be planned around the child's degree of visual efficiency. Relatively few visually impaired children have a total absence of vision. The majority have some small remaining ability for seeing. This is known as residual vision. A child who has so little residual vision that he must read by the braille method is designated as educationally blind. The educationally blind generally have light perception and frequently can grossly perceive large objects and movement.

The other educational category for the visually impaired includes those children who have a sufficient degree of residual vision

as to permit them to use vision for learning in many situations. Educationally, these children are referred to as partially sighted. The partially sighted can be trained to use their residual vision with greater efficiency. Their most successful avenue for learning may be other than visual, but their residual vision can be of importance in supplementing and reinforcing learning by other input channels. Unless the residual vision of the partially sighted child is trained, the small amount of vision can become irreversibly lost.

Whether a given pupil should be classed as educationally blind or partially sighted cannot be decided on the basis of any one criterion. Measures of visual acuity have very little relationship to actual visual efficiency. It has been ascertained that about 85 per cent of children with 20/200 or poorer vision read print as a primary learning activity. Approximately 10 per cent of children with 20/200 or poorer visual acuity must rely on braille. The remaining 5 per cent use braille and read print about equally in learning. Children with visual acuities better than 20/200 invariably are able to read print satisfactorily.

Educational Objectives for the Visually Impaired

The goals of educating the visually impaired are those of providing special assistance required for minimizing or circumventing the visual limitation while developing their capabilities for learning to the highest level of effectiveness. Visually impaired children are those who learn most efficiently by other than visual methods. The educational effort centers on training the child to use his remaining vision to the greatest advantage, or to supplement and substitute for visual learning through touching and listening. From birth onward, development involves the child learning how to use his senses to find out about his surroundings. Just as his muscles must be exercised in order to grow and function, so must the child have practice in using his ability to smell, taste, touch, hear, feel, and see the world. The more he interacts with objects and persons in his surroundings, the more he develops capacity for interacting. The greater his capacity for interacting, the more he is capable of learning. The reciprocal nature of this process of interaction and development of capacity is the basis for educational intervention.

The goals of education for the visually impaired are guided by the normal processes of growth and development. The objective is to provide activities which will replicate these normal patterns or to train the child how to compensate for experiences which are denied him by his disability. Essential learning activities for the visually impaired child include:

1. Encouragement to use what residual vision they possess.
2. Systematic introduction to the people, objects, and events that surround the child.

3. Opportunities to associate closely with the many and varied persons interacting with them.
4. Practice in perfecting those basic skills (dressing, eating, mobility) which will insure personal independence.
5. Physical movement and exercise which will permit the understanding and use of the body.
6. Practice in communication to express himself and to relate to other persons.
7. Interactions with significant adult persons who will provide realistic appraisals about the child's success in coping with the world.
8. Demonstrations of ways to get ideas and reactions about how people feel on the basis of non-visual clues.
9. Development of the use of touch in finding out about his surroundings.

These objectives are held for all children, but the kinds of learning activities presented to an individual visually impaired child will vary, largely reflecting variations in the child's capacity for learning. Chief of these variables are differences in the visual effectiveness of the child. The child who is blind performs differently from one with residual vision. A child who is born with a visual impairment is unable to do some things done by the child who acquires a visual disability after several years of normal vision. Children of the same visual acuity function with variable degrees of effectiveness. The child's vision may fluctuate widely because of the nature of the eye disorder, fatigue associated with sustained use of the eye muscles, or because of differences in ability of the eyes to process different conditions of illumination. The teacher observes the pupil's ability to use vision in the classroom learning activities and reports this to the ophthalmologist or optometrist. Discrepancies in visual performance in the clinic office and the classroom can thus be clarified so that the pupil has maximum benefit from the services of the eye specialist and the teacher.

The practice of having separate classrooms, materials, and teachers for the several types of visual impairment is giving way to an approach of placing all children with visual difficulties in the same program. Separate programs may still be encountered, and even where all pupils are placed in one program, there are adjustments and emphases which are made in accordance with the visual learning potential of the pupil. Major groupings of educability as related to visual efficiency include:

Educationally blind. After a slow start in attaining most early developmental tasks, the blind tend to make a very satisfactory adjustment in school. They usually enter school with favorable auditory and tactile skills. They learn the braille method rather quickly, and often create a minor problem for the teacher who must prepare braille

editions at a pace to keep ahead of the rapidly progressing pupil. The blind may find it easier because their visual loss is consistent. Learning to adjust to a situation is difficult because they have no vision, but once they have made the adjustment, they can meet similiar situations with assuredness. Training which will improve mobility is a major concern in providing an effective educational program for the blind. Recognition of this difficulty has resulted in an emphasis on beginning orientation and mobility training in the pre-school years.

Educationally Partially Sighted. Pupils in the partially sighted group have amounts of vision which can be educationally useful. Partially sighted pupils must have special training in how to use their residual vision effectively in learning. The major goals for their education focus on achieving this objective. Aspects of training to use the residual vision more effectively entail instruction in how to operate magnification devices. Collectively referred to as "low vision aids," this group of equipment includes stationary and portable lenses for enlarging an object for viewing. They usually have provision for controlling illumination. In addition to the assistance from these technical instruments, the partially sighted are given instruction in how to supplement visual clues with information from other sense channels, especially auditory and tactile modalities. Even though the partially sighted can be said to have more capacity for learning than do blind, paradoxically, life is more difficult for the partially sighted. The partially sighted have adequate vision for dealing with some situations, but discover their vision is insufficient for other similar situations. As a consequence, the partially sighted child encounters a greater number of uncertainties in his efforts to come to terms with his surroundings and must struggle to evercome a persistent borderline status. Marshalling his resources to deal with these unknown and problematic situations makes added demands of the partially sighted child. Learning to overcome doubts about his competency may pose greater limitations on the functional effectiveness of the partially sighted than does his visual loss.

Education for the Adventitious Visually Impaired. Remarks made in the preceeding paragraphs regarding educational objectives for the blind and partially sighted are directed to children who have a congenital visual loss. Most visual losses observed in children are of congenital origin. A smaller number of children acquire educationally significant visual losses, less than ten percent of the total group of visually impaired.

Educational objectives for the child who acquires a visual loss will depend on the degree of remaining vision. It is rare that an acquired disability results in a total loss of vision, rendering the child blind. When such occasions do arise, the educational objectives are very similar to those held for the congenitally blind child. There may be an initial period for training tactile and auditory skills before culminating with training in braille and mobility-orientation skills.

Providing support for the child's possible strong emotional reactions to the visual loss may be the more difficult task.

Acquired visual disabilities more frequently result in partial losses of vision. The person must be shown how to use remaining vision with the greatest efficiency. This will entail training in the use of low vision aids and in strengthening visual clues with information from auditory and tactile senses. The child with a congenital disability has never experienced a different way of life, but the child who incurs a loss of functioning faces a different demand for adjustment. Severe emotional reactions may be associated with acquired visual losses, and the chronic frustration experienced by the partially sighted places added psychological stress on the individual. Arrangements to counter these emotional difficulties must be included in an effective educational program for assisting children with acquired losses of vision.

Educational Objectives for Monocular Visual Impairment. The eyes work in cooperation, but they are separate sense organs. Since both eyes are subject to the same sources of injury, both are usually damaged by noxious agents. The eyes do not necessarily experience equal damage in such instances. In fact, mild differences in the functional effectiveness of the eyes are common even when there is no history of attacks by pathogens or injury. These variations are resolved by corrective lenses or by personal adjustments made by the individual. In rare instances, one eye may be damaged severely with a resulting loss of vision that is educationally significant.

In the past, the loss of an eye was regarded as having profound consequences for the individual. Experience has shown that the loss of one eye, resulting in a condition termed "monocular vision," produces very little reduction in the visual efficiency of an individual. There is some reduction in the peripheral visual field, and ability for "depth perception," the location of objects in space, may be the most impaired. It is of interest to find monocular persons reporting some visual tasks, such as reading, to be more easily performed. The education of persons with monocular vision does not present special problems unless there is an educationally significant degree of visual loss in the remaining eye. When the loss approximates that of the blind or the partially sighted, the educational objectives become the same as for other children in these categories of visual impairment.

It is apparent that there is no single criterion which can be relied upon for indicating the educational placement that will be appropriate for a visually impaired child. Plans must be outlined on the basis of total educationally relevant information, including medical findings, possibilities for corrective lenses, social resources of the family, and the psychological picture of the child's learning ability and personality development. Even then, there may be a "trial and error" period in which the teacher observes how the child is actually able to function in the classroom. Consultations and conferences with

the team of professionals providing supportive services for the teacher and the child will generally enable the teacher to present learning activities which are correct for the child.

Facilities for Educating the Visually Impaired

Experience with the visually impaired has indicated the suitability of several different physical arrangements for delivering relevant educational activities. A review of these facilities and their associated strengths and limitations will clarify their place in the total educational services for the visually impaired. Understanding the characteristics of each program will increase the assuredness of properly placing a particular visually impaired pupil.

Residential Schools. Residential schools were the first designated centers for the education of the visually impaired. Initially, these were institutions charged with giving persons with visual disabilities a sheltered place to live. Contacts with visually disabled persons, usually the blind, in these institutions led to the realization that a severe visual loss did not render a person uneducable. Residential schools have continued to explore and to develop techniques for educating the visually impaired. A noteable example of an outstanding residential school is the Perkins School for Visually Impaired.

Residential schools take their name from the fact that the pupils in attendance live in the confines of the school. Pupils may return to their homes week-ends or for lengthy school holidays and vacations. Residential schools generally have a complete staff of professional workers; physicians, social workers and psychologists, available for working with the teacher or directly with the child. Living in a residential school can be restrictive of contacts with the larger community and also takes the child away from a certain amount of interaction with his family. Residential schools are justified for sparsely populated areas where pupils might have to travel great distances to attend a suitable school. Residential school populations are also observed to have a high frequency of multiple handicapped visually impaired children. Emotional maladjustment, neurological disabilities, mental retardation, hearing losses, and crippling conditions are impairments commonly found in association with visual losses. The complete professional staff and possibilities for 24 hour care may offer the most effective educational possibilities for the child with multiple learning impairments.

Day Schools. One of the attempts to correct for the social limitations associated with residential schools involved the movement of centers for educating the visually impaired into the public community. Children attended the special school on a schedule which approximated that of the regular public schools. After the school day was over, children attending these "day schools" were free to participate in normal community, home, and family activities. Day schools are

sometimes independent of any administrative connections with the community public school system. In other arrangements, day schools are operated entirely under the administration of the community public school system. This arrangement is frequently observed in larger metropolitan centers where there is a greater concern for specialization within the system.

The educational program offered by day schools is very similar to that of the residential schools. Day schools tend to have representational supportive services (medical, social work, psychological) available for assisting the teacher or the child directly. In practice, students attending day schools have little interaction with other children in the community (who probably attend other schools). Contacts with regular school students and classrooms are minimal and such experiences are fraught with difficulties arising from limited acceptance of the visually impaired child. Thus, the isolation features of the residential school are only partially corrected. Even though located in the community, travel to the day school may present serious problems for many children or their families. To the extent that the pupil shares in family activities and participates in community affairs, attending a day school can be advantageous. An unexpected benefit is the training in vocational preparation which is generally included in the day school curriculum. Pupils enrolled in day schools tend to be "pure" types, that is, those who have visual impairments with no added learning disability and who demonstrate ability to be successful in the day school program.

Special Class. The establishment of a classroom with a teacher and materials particularly suited for the visually disabled pupil marks a third plan in strategies for educating the visually impaired. The special class is administered by the local school system and is situated in a building housing other regular classes. The location and the supervision of the special class bring it into direct interaction with the activities, personnel, students, and objectives of the regular school system. Pupils attending a special class program may actually be enrolled in a regular classroom. They go to the special class only for particular training or for assistance in learning a given skill, such as reading. Pupils may spend all of their first few school days in the special class, but are scheduled for less time in the special class as they master required skills.

Originally thought of as centers where the visually impaired child could be educated in "real life" conditions, special classes have proven most effective where there has been a concerted push to place the pupils out into regular classes. Special classes, even though housed in a building with other regular classes, can maintain an isolation which segregates the child from necessary socialization experiences just as completely as does the residential school. Integration of the pupil into the full range of regular class activities places great demands on the special teacher, but is the real advantage of the special

class. When part of a regular school system, the special class teacher may have only limited access to the services of other professional workers (physicians, social workers, psychologists, vocational counselors). The teacher must depend on parents for obtaining most of these services for the child. The special teacher must become an easily accessible and strongly supportive person ready to help the regular class teacher work out any problems generated by having a visually impaired pupil in the regular classroom. This supportive function of the special teacher is evident in the terms "resource room" and "resource teacher" frequently used to designate the special class and special teacher.

Itinerant Teachers Serving the Visually Impaired. Yet another approach to educating the visually impaired pupil is based on the recognition of the importance of the child learning how to adjust in the regular classroom. In this arrangement, the visually disabled pupil is enrolled in the regular class and participates in all the ordinary class activities, masters the same instructional materials, and creates his own social adjustment. Support for the pupil is provided by a teacher trained in the special educational problems of the visually impaired. The special teacher makes a regular schedule of visits to schools attended by the pupils she serves, spending as much time as is needed with the pupil and with regular teachers who work with the pupil. This arrangement of traveling from school to school has been the basis for labeling this type of service as an "itinerant" program.

The itinerant program makes considerable demand for skill and training of the special teacher. Teachers assigned to these programs must coordinate essential services from other professionals (physicians, social workers, psychologists) and see that these are available to the pupil. The itinerant teacher must assume responsibility for carrying out all steps favoring a satisfactory classroom adjustment, just as the resource teacher works to support the regular class teacher. This entails informing the regular teacher precisely regarding:

1. What the visually impaired child is able to see and what he cannot be expected to see.
2. Those learning situations in which the visually impaired child can be expected to have difficulty and what can be done to reduce and circumvent a failure.
3. What instructional materials are available and how they may be used effectively.
4. What assistance the regular teacher can expect from the psychologist or social worker and how to request this service.
5. What the regular teacher will be expected to achieve with the child.
6. When the itinerant teacher will make the next visit and where the itinerant teacher can be contacted on an emergency basis.

7. A review of the education program planned for the pupil with a clear indication of what each teacher is expected to do and a precise agreement about which teacher will do what things for the pupil.

Preschool Programs for the Visually Impaired. A rapidly expanding trend in the field of educational programs is that concerned with organizing facilities for early school, or preschool, education. This development has been given impetus by the growing information as to the importance of experiences during this critical stage. Work habits, expectations for reward, and values for achievement levels are some of the important social learnings acquired in the age range of two to five years. Specific skills in the language areas of comprehension, fluency, and vocabulary and in the motor areas of coordination and kinesthetic abilities are also acquired during this before-school period.

Preschool programs may be found in conjunction with residential schools, day schools, or as special classes in the public schools. They combine giving learning activities to the child in the classroom with conducting special classes which assist parents to be more effective in their contacts with the child in the home. The program is staffed by a team which includes a teacher trained in the education of the visually impaired, a child development specialist, and a case worker. Preschool programs have a generous provision for services from the usual support areas of medicine, optometry, and psychology. More than a place where children come to play together, preschool programs present a well-defined and sequential series of learning activities. Normal developmental processes and happenings are organized so as to insure that each child has the practice necessary for developing the basic skills which will be required for meeting successfully those social and academic demands he will encounter at school. Visually impaired children who have participated in such a formal program prior to entering school have been observed to make a smooth transition and to keep pace with the seeing child. Parents are much more assured as to the essential competency of their child and are more cooperative in working with the school.

From the discussion of educational facilities and types of programs, it is apparent that each arrangement offers some desirable, along with some less desirable, opportunities. Possibilities include the residential school with cradle to career services in the shadow of social isolation and dependency. At the other extreme is the itinerant program which emphasizes independence and social participation to the point of curtailing special supportive services. The existence of such a variety of provisions, which may at first seem puzzling, is understandable and justifiable as a natural effort to meet the educational interests of each child. Some visually impaired children may profit most from a residential school placement. Another child with a visual disability may make it in a resource room. An even more likely happening would see the child placed in a series of facilities, moving

from one program to another as his capacity for adjustment grows stronger. A child might begin his education in a residential school, move to a special class, and graduate from an itinerant service program, as an example of favorable response to an educational sequence. In each instance, placement in any one program would be made on the basis of study of the pupil's progress and recommendations made by the eye specialist, the psychologist, the social worker, and the teacher.

Classroom Activities for the Visually Impaired

There is no list of characteristics which are uniquely associated with losses of vision, but varying degrees of difficulty in these areas are encountered by the visually impaired child.

1. Minimal visual acuity and restricted visual field.
2. Weak figure-ground discrimination ability.
3. Difficulty in picking out and organizing details.
4. Poor eye-hand coordination.
5. Faulty visual fixation and tracking.

Although these are the common areas of concern in the classroom, the list is not in a hierarchical arrangement. There is order and progression in growth and development, but the pattern is an individual one which must be ascertained for each child. All of which may be only repeating the often said but quickly forgotten axiom that children learn the same things, but not at the same time nor in the same way. The visually impaired child is expected to master the same curricular objectives as does the seeing child, preferably using the same materials (toys, blocks, paints, books, pictures, crayons) where possible. He can sometimes do this if allowed a little longer time; in other learning situations, he may have to learn from other materials and in different ways. Here are a few areas having particular relevance for the learning of the visually impaired child. The training in the areas is not carried out in isolation, and the topics mentioned are separated only for convenience of discussion.

Language training. Language ability, essential as the vehicle for organizing all experiences, assumes a critical importance for the visually impaired child. The visually limited child receives less information from his surroundings and finds it more difficult to verify impressions gained in contacts with the world around him. Language facility can take over some of both these functions, thus reducing the consequences of the visual loss. The visually impaired child must be given continuous verbal accounts of events and descriptions of objects around him. The teacher must concentrate on developing language skills as one of the first educational objectives, otherwise the visually impaired child is cut off from a major contact with the world he lives in. Language stimulation is provided by a variety of

game-like activities, such as telling the child the names and attributes of objects as he explores the objects using touch. Later, the child may be given the object to identify and then asked to tell all he knows about it. There are "touch and tell" books, form boards, and cut-out puzzles, Records and tape recordings of stories can be used by the child when the teacher is busy with another activity. Games which involve movements of body parts according to specific directions are enjoyable ways for increasing the child's skill with language. While engaged in these language stimulation games, the child must be instructed in how to recognize subtle variations in the speech of another person and how to relate these clues to the emotional state of the speaker (tired, excited, angry, frustrated). Language activities and the ensuing discussions always lead to the child discovering that other people can see and get different information than is available to him.

Auditory training. Closely associated with language facility, and the major receptive channel for the visually impaired, is the sense of hearing. Auditory skills must be developed to a high degree. The teacher begins early to train discrimination, memory, and patterning skills for processing auditory stimulation. The child must learn to differentiate sounds, to localize them with precision, and to associate sounds with the correct object or source. Tape recorders and special records are useful in training auditory skills. Game-like activities of high appeal to children are effective in sharpening auditory abilities. Noisemaking toys can be identified. A record of familiar sounds may be played and the children asked to tell what makes the sound. A game of "find the sound" can serve as an enjoyable way for improving ability to localize sounds. The child can make his own tapes of sounds which he produces or which he collects from the direct sources. Once the child has become adept at dealing with sounds in the classroom, he should have his auditory skills extended by visits to the larger community where he can gain familiarity with the sounds of people walking, a ball game, traffic, automobiles, children at play.

Visual Training. Although it may seem absurd to think of training a visually impaired child to use vision, the point has been stressed that most of the pupils classed as educationally visually impaired have varying degrees of vision. It is important to take steps to enable the child to use residual vision to the fullest extent. This requires learning how to use magnification, knowing the limits of residual vision, and finding ways to supplement and to strengthen weak visual clues with other sensory information. With training, many visually impaired children can observe gross movements, posture stances, identify general sizes and shapes, color masses, and facial expression changes. Many concepts are difficult to present in tactile representation. Even ability to detect light can be of valuable aid in orientation. The former notion that vision could be injured by too much use (recall the "sight saving" special class) has been disproved. Eye muscles may tire, but the child should be encouraged to use his remaining vision to a maximum degree.

Tactile-motor Training. Touch is frequently the second most important avenue for sensory contact with the world when there is a significant visual loss. The most essential use of touch can be found in the braille method of reading and writing, but there is much other important information acquired by the tactile and kinesthetic senses. Tactile and kinesthetic senses work in close association with motor functions, often reinforced with auditory clues. The visually impaired child must develop ear-hand coordination and become skilled in recognizing the feel of various surfaces and materials. This information is essential for effective mobility. The child uses such information to tell if he is on the sidewalk or on the grass. Most tools and utensils are identified through touch, and observation of the blind child reveals that he "sees" objects by feeling them. Counting blocks and the abacus board are invaluable for teaching math concepts. Even though many things (concepts) are difficult to present in a tactile modality, there are braille pictures, raised diagrams and maps, as well as a variety of science materials for illustrating such principles as the lever, wheels, and weight in tactile forms.

Mobility is a basic skill that must be mastered by the visually impaired, especially the blind. This skill may be the most revelant to achieving independence. The increasing degree of mobility demanded for living in our world has posed a major difficulty for the blind. All resources must be coordinated in achieving effective mobility; "seeing eye" dogs, canes, mechanical aids, and information from intact sensory channels. This demand is the most likely to evoke responses of fear and results in the severely visually limited being repeatedly placed in anxiety producing situations. As is true for most skills, mobility is enhanced when training is initiated in infancy and incorporated in the normal exploratory activities of the child. Older children may have to be sent to special mobility training centers for assistance in acquiring effective mobility.

Socialization Training. The visually impaired child faces particular socialization problems, especially if he is blind, that must be corrected by appropriate training. Much of the behavior which becomes the target for change can be considered to be developmentally normal, or is understandably difficult to achieve without vision. Nevertheless, these behaviors are not acceptable to other persons and cause the visually impaired child to be rejected and ridiculed. Included in the group of behaviors to be extinguished are those referred to a "blindisms." Rocking, swaying, flipping of hands, and jingling objects are examples of behaviors which seeing persons may regard as odd and unacceptable. These behaviors are easily managed by substituting equivalent socially acceptable responses such as rhythmic walking, or "doodling" while listening in a group. In other instances, the child must be shown how to hold his head in approved ways, to pay attention to personal grooming, and to be careful about bumping into other persons. Good table manners are particularly difficult to acquire and take long hours of practice.

Vocational Training. Preparation for a gainful occupation is an area that is frequently omitted in the school curriculum, even though satisfactory adjustment as an adult demands economic self-sufficiency. The visually impaired person is vulnerable to being more severely penalized by this omission because he will likely find it more difficult to obtain a job than will a sighted person. Preparation for a vocation should begin early in the educational sequence with the cultivating of positive attitudes and values about work. This can be followed by relating the visually impaired child's assets to occupations. Various occupations should be explained in detail to the visually impaired child who has an infinite number of possibilities rather than being limited to making brooms as was the situation not too many years ago. Vocational counselors and the resources of the Office of Vocational Rehabilitation can be of great help in aiding the visually impaired person to find suitable employment.

Securing Parental Support for the Visually Impaired

Parent approval has long been recognized as having a favorable effect upon the school. Parents contribute most of the monies which finance the school program. They can counteract and even undo training presented at school by reacting unfavorably or by withholding recognition for the objectives and goals of the school. In addition to these usual manifestations of parental support, educators working with the visually impaired are seeking active parental participation in the educational activities. In order to secure parental participation, educators are willing to commit a sizeable portion of their resources.

Parents as Educators. The childhood period prior to entrance into school has been regarded as a time of free play and informality by our society. Educators have believed the child's maturational and developmental progression warrants beginning formal education at five or six years. It is obvious that the child of six years is a complex personal organization capable of coping with many tasks. This organization and competence is the result of learning which has taken place in the supposedly quiescent preschool period. If a favorable personal organization has been acquired, things continue to go well for the child. Where an unfavorable personal organization has occured, development must stop while the difficult task of correction is carried out.

Training parents to interact with the child in ways that are more likely to have favorable consequences is preferable to conducting extensive alterations on the finished product. The visually impaired child is subject to more than the usual amount of frustration and failure when attempting to achieve mastery over his surroundings. This means that greater care must be exercised in showing the child how to interact with the world. The teacher, in cooperation with other school staff members, is concerned that parents have support and assistance for insuring that selected formal objectives are achieved

by the visually impaired child in the preschool period. The teacher and the school staff stand ready to work with parents in accomplishing the desired training. Parents must help to instill independence and self-reliance by assigning real jobs for the child to perform at home and by showing the child how to do the job.

Parents of a visually impaired child must learn to observe the child's behavior in detail so as to discover how the child learns something, to know how and what the child sees, to note those things the child can do well, and to identify those tasks which are especially difficult for the child. Restricting a child's activities may protect him from injury, but the cost is prevention of normal development. The visually impaired child needs to know the pleasure of moving around. Sometimes he may need to be shown the specific movements of turning over, sitting up, crawling, walking or running. More often, it is a matter of encouraging him to make the responses. Since he cannot see many things, attaching noise-makers to his toys may encourage him to reach out and go after them.

Time spent individually with the child should emphasize training for touching, grasping, and feeling as a way to find out about the world. He can be expected, and should be encouraged, to taste, smell, and touch new toys and objects as his way of finding out about them. Sometimes the child's hands may be placed on the parent's hands as some task is carried out (dialing the telephone) to show the child how to perform. As the child first begins to move around, the furniture should always be in the same position, but as proficiency in walking or crawling is gained, the furniture should be re-arranged and the child informed of the new arrangement. The parent must expect the child to fall and to get bumped. This is a part of normal learning. The child may be helped to begin to use sounds as a way of avoiding danger (as a door squeaks when it is opened, water boiling on a hot stove makes a bubbling sound).

Preparing the child for play with other children and meeting other people requires special considerations. Visual clues have a great importance in regulating children's play. The child can be trained before hand for some activities, especially games. Practice with the parent is easier than practice given by impatient peers. It is to be expected that the visually impaired child may be taken advantage of occasionally, just as parents with a handicapped child are given more of staring and being looked at than are other parents. The child can be helped to understand that he may be given a smaller piece of candy or left out of a turn in some instances, but this also happens to other people. Selfishness or cheating, though undesirable, are real traits manifest by some persons and one must learn to deal with them.

Parents as Volunteer Workers. The job of organizing parent groups and working with parents is sometimes thought of as belonging to the social worker, but in practice it is often the responsibility of the

teacher. Teachers working with visually impaired pupils have more than the ordinary interest for working closely with parents. Teachers may individually, or as part of a team of school staff members, organize and maintain parent groups which are concerned with working out specific problems associated with having a visually impaired child in the family.

A type of parent unit which differs from the counseling or therapy oriented groups is made up of parents who volunteer their services for helping the teacher. There is a magnitude of extra work that must be accomplished in order to keep the visually impaired child supplied with learning materials adapted for his abilities. Making braille editions of textbooks and readers is a time consuming, but necessary task. Some materials can be reproduced in tactile versions. Maps, charts, and items contrasting forms or shapes are well suited for this modification. But many concepts are difficult to illustrate in tactile representation and have to be prepared in greatly enlarged form or changed to verbal descriptions. Preparing materials on audio tapes is a major task. The visually impaired should be taken on frequent visits and trips to find out about the community. The range of activities makes more demand than can be supplied by a single teacher. Volunteer parent help is essential. It is preferable to have a child's materials prepared by other than his own parents, but if arrangements cannot be made for service groups or clubs to do the work, then the parent may have to provide this assistance to the teacher.

SUMMARY

Various approaches have been used for presenting educational sequences suitable for the visually impaired. Out of these experiences, educationally relevant classifications of partially sighted and blind have been found useful. Specially trained teachers and materials are needed for the education of the visually impaired, but the educational objectives and content mastery are the same as for the sighted child. After a somewhat slow start, the visually impaired develop and achieve at essentially normal rates. A normal developmental progression is favored by early training in mobility, language, auditory, and tactile-motor skills. Most visually impaired have amounts of residual vision which, with correct training, can be of educational value. Close cooperation of the parent and involvement in the learning activities is necessary to assure the visually impaired child's getting the early training required for later adjustment. A visually impaired child may be placed in several types of programs in progression in order to provide developmental experiences needed at a particular growth period. As a group, the visually impaired make a most favorable response to an educational program. The appropriateness of the educational program is ensured by the cooperative collaboration of a team of professional specialists which includes an eye specialist, special teacher, social worker, and psychologist.